

Natural philosophy, medicine and the
culture of science in provincial England:
the cases of Bristol, 1790-1850,

by

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ABSTRACT

This thesis seeks to contribute to the field of local historical studies of scientific and medical culture by taking examples of activity in the West of England between about 1750 and 1840. The cities of Bath and Bristol provide the centres of attention.

Bath, a tourist town with an itinerant population, developed scientific and medical communities that reflected the nature of the local economy: it also produced a hospital that both utilised the local spa waters while forming part of the culture of improvement and decorum that helped make the city a by-word for Enlightenment ideals. This hospital, the place of medical men in intellectual life, and the variations between medical writers as to what the Bath waters consisted in, are all discussed. Certain differences between events in the eighteenth century and those of the early nineteenth are also examined, the latter being a period of relative quiet in the history of the city.

Bristol receives more detailed attention for the years 1790 to 1850. The general cultural background is described, with examples, such as the eighteenth century work of the 'geologist' Alexander Catcott (1725-1779) and the theme is then carried forward into the nineteenth century city, with specific examples. The chief of these are: the Bristol career of the doctor and chemist Thomas Beddoes (1760-1808); the origins and progress of the Bristol Institution for the

Advancement of Science , Literature and the Arts, from about 1820 to 1850; the beginnings of new forms of medical education and medical lecturing; episodes from the history of local dispensaries and hospitals; and the various forces at work in the foundation of Bristol's first zoological gardens. The thesis finishes with a conclusion that attempts to summarise the distinct features of local elite culture in these years.

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ADDITIONAL MATERIAL

Michael Neve and Roy Porter, '**Alexander** Catcott: Glory and Geology', British Journal for the History of Science, 1977, 10, 37-60.

Michael Neve, 'The Young Humphry Davy: or John Tonkin's Lament', in Sophie Forgan, (ed)., Science and Sons of Genius: Studies on Humphry Davy, London, 1980, 1-33.

Photocopy of the prospectus of the course of ten lectures on comparative anatomy and the philosophy of zoology, given by Henry Riley at the Bristol Institution in April, 1833. (Index number at Bristol Central Library B9717).

Chapter I

This thesis **examines** certain episodes in the development of science, **science**-writing, scientific institutions and the activities of medical men, in the West of England between about 1750 and 1850. Of the two centres that receive **concentrated** attention, **Bath and** Bristol, the historical **focus is an** eighteenth **century one**, **in the case** of Bath, the emphasis in the Bristolian **example being** on the nineteenth century.

One early proviso that should be made is that the form of the thesis itself, and the historical detail that it requires, should not be taken to mean that the events described are of major significance, either in the localities themselves, let alone the national scene. The forms "of association that led up to the founding of, say scientific institutions, were specialised and minor: they were the outcome of certain specific social goals on the part of their founders, goals to do with educational ambition, or a desire to associate with other developments observed in the nation, and formed only one small part of the daily lives of the individuals involved. The place of 'science' in local culture was nothing like as important as the place of politics, or religion, or even the expounding of ideas of civic virtue or commercial progress.

To put this in another way, the development of an Interest in 'science', or listening to others talk about science, has no obvious relationship to the model of the place of science in the early industrial revolution, as laid

out by speculative writers such as **Ian Inkster**.¹ Inkster's bold attempt to theorise on the actual foundations of industrial innovation in Britain in the eighteenth century, with its use of information - exchange, geographical movement of skilled personnel, especially from Scotland, and the resultant generation of low-cost, practical scientific data is applicable to a world outside that of this thesis. Instead, the history described here, at least with regard to scientific activities in Bristol in the early nineteenth century, is an extended footnote to the fine, comprehensive researches of Morrell and Thackray in their study of the British Association for the Advancement of Science.²

The 'culture' of science and medicine examined here is above all that of the elite beneficiaries of commercial economies anxious to be taken seriously as builders of educational setting (both scientific and medical) that came into existence as Bristol bourgeois culture set its house in order in the years around - and after - the wars against France. (The Bath example is slightly different, because of the eighteenth century focus already mentioned). In Bristol, a ..commercially established elite sought to restrict and make exclusive the new institutions deemed 'appropriate' in the atmosphere of bourgeois respectability that was a central cultural task (often underpinned by religious evangelicismi in the period 1815-1840, The distant objects that were to be emulated in this example were Oxford, Cambridge, the Royal Society, and the public schools. And no doubt the

culture that **was seen as most exemplary was Germanic, or at least Prussian**. Morrell and Thackray's study of the BAAS testifies to the considerable energy that underlay the origins of the BAAS, a peripatetic ministering angel of the 'serious' beourgeois **consciousness** that would bring distance between popular and elite worlds, while conferring respectability and pride to the visited worlds. Bristol is of interest, to the student of minor cultural **episodes**, in that the achievement of this respectability was literally its own reward, and the individuals and institutions that struggled to manage it did so as a last gasp, as it were, before entering a period of demise. Certainly, the second half of the nineteenth century saw the arrival of the full-fledged educational symbols so eagerly sought: a properly respectable public school, and eventually, a University College. But the period up to 1850 is the story of a rather underestimated aspect of the history of local middle class life: the final fling; the final fling not just of money, although this was of course crucial, but also of the particular combination of religious thought and charitable impulse that characterised Bristol in the eighteenth century.

For Bristol has to **be seen, as an** apparently unusual city, a city that was commercial, **semi**-industrial, redolent of civic pomp and ceremony, yet with an unusually high number of religious settings that combined to make it a conservative stronghold, especially of Protestant feeling, both elite and

popular. Eighteenth century **Bristol was a centre of commercial** Toryism, with **a deep** involvement in the Atlantic economy, **and a large number of** religiously **based** voluntary associations that provided the public **services that a** profligate corporation was not interested in subsidising. None of the nineteenth century **aspects of** the city described later (not even the Whig or apparently 'progressive' examples) can be understood without bearing these facts in mind. The eighteenth century was the centre of gravity, to which the mildly innovative events described later were answerable. The eighteenth century political legacy, especially that of the Corporation of the city, had to be cleaned up. And the **absence** of a proper building for the expounding of conservative, non-utilitarian science had to be remedied. But the events and the personalities of the 1815-1850 period in Bristol's 'scientific' culture were not, as it were, new. These were often representatives of fully established families, with experience of political and commercial hegemony, who were keen to orient part of the culture of their city to the national consciousness of their class in the period of nineteenth century reform. But that period of reform has to **be seen as** a modification of existing conditions, with an especial emphasis on breaking away from any residual 'popular' cultural activities that had existed in the previous century. A sense of what this means can be gathered by condensing some of the previous work of Latimer, Ralph, McGrath et al, Little, and Barry, all of whom have studied eighteenth century Bristol'³

Bristol's economy is described, in later pages, as

'non-industrial' and some attempt should be made to clarify

this term.. 'Industrial' developments, particularly those in the northern towns of England, allow one to distinguish **between commercial and manufacturing centres and the newer** phenomena of the 'first industrial revolution'. But non-industrial would certainly be an unhelpful expression if an image of smokeless cottage industry was to be the accompanying pastoral idea. Bristol had considerable industry, in terms **of glass manufacture, brass and iron works, soap making and** sugar refining, as well as the ancillary trades connected to its port. And within the financial structure of the city, local bankers themselves financed industry that they also owned, the most famous example being the Harfords, whose descendant John Scahdrett Harford (1785-1866) **became an** irascible, well-connected, full time organiser of evangelical and cultural activities in the events described in chapters **4 and 5.**

Another way of bringing out features of the Bristol eighteenth century background is to sketch the economic hinterland of the city itself. Except within the city itself, the area to the north of the city, especially central Gloucestershire, remained an advanced centre of woollen manufacture. But by 1800, Bristol itself had ceased to be a woollen manufacturing centre. There was no relationship therefore between activities in the northern hinterland and in the city. Similarly, to the south of Bristol, the Somerset and Bristol coalfields declined quickly from 1800,

unlike some neighbouring areas, notably the Forest of Dean. It is striking that the iron ore needed for the railways in mid-nineteenth century Gloucestershire came from these and not from the Mendip, where the mining of lead and zinc ore virtually ended with the 1825 reduction of 'tariffs on important non-ferrous metals.

Thus the economy of the city of Bristol was based on the port itself and the Atlantic trade that figured so large in its imports and exports: the export of glass and pottery to the colonies, and the import of sugar and tobacco. The third part of this triangle - the shipment of Negro slaves across the Atlantic - remained the unspoken basis for much of the mercantile wealth of the city's famous families: Daniel, Bright, Gibbs, Miles, Pinney. Typically, the Miles family became synonymous in the nineteenth century with cultural generosity. Equally typically, the 'scientist' Charles Daubeny, who virtually opened the Bristol Institution for the Advancement of Science in 1823, could write to the geologist H.T. de la Beche in the spring of 1825: 'My negroes are contented despite trouble elsewhere'.⁴ It should also be remembered that the trade in sugar (itself the product of slave labour) could be imported directly, using lighter ships built for direct sailings,

Bristol's dependence on its port facilities did not lead to efficiency however, as all historians of the city have stressed. Even when the corporation, and the society strikingly called the 'Merchant Venturers' did finance improvements in the first decade of the nineteenth century, the result was a classic

contradiction: a bill of £600,000 that needed **increased** harbour dues to pay it off. The permanent **sense** of losing the competitive battle with Liverpool, Bristol's **commercial super ego, was** thereby heightened, and Liverppols' authority in the cotton trade added to its advantages.

Bristol had therefore, by 1800, a diminished relationship with its textile northern hinterland, its southern (though not its eastern) coalfield connections, and parts of even the powerful Atlantic trade that was synonymiws with its mercantile history. Indeed one useful general way of visualising the fundamental orientation of Bristol's economy was toward North America: the elections in Bristol in the 1770s and 1780s _ involved often fierce disputes about the need for the American war and the commercial damage that it brought.

The economic background to the Bristol example needs to be added to by certain speculations on the idea of 'culture' in the city in the later eighteenth century. In ways that **seem far less present in the decorous evangelical atmosphere** of the period 1800-1840, eighteenth century Bristol does seem to have generated moments of civic cultural ostentation designed to appeal to the entire populace. Indeed, part of the achievement of modern historians of eighteenth century England is to have mapped the shared desire of both 'elite' and 'plebeian' communities to unite, at certain ritual movements, in the expression of collective feeling, mostly anti-French, and often anti-Catholic, 5 And, as Barry has suggested, the corporate profligacy that so offended the great Liberal historian of Bristol, John Latimer, in the late nineteenth century, may actually have been the source of

considerable effective civic pride, felt by all classes.⁶

Outbursts of civic profligacy could cement the idea of actually being a Bristolian citizen, for those who participated in ritual moments, most of which were dedicated to celebrating the crown and the constitution: and the celebration of such moments need not be seen as confined to the members of the corporation and the guilds: they were genuinely popular occasions.

Another feature of the civic culture of eighteenth century Bristol that the histories of the city suggest is that moments of celebration, both of city and of the nation, could take place within a community that was run by an elite heavily committed to the reform of manners, and to the merits of philanthropy as one way of enforcing such a reformation. The number of schools and institutions that were created in the eighteenth century with explicit, Christian pedagogical purposes in mind was considerable, and the name of Edward Colston (1636-1721) lived on throughout the century as the highest example of Tory, Christian philanthropy in action. Of course, the blitz of evangelical literature in the early nineteenth century was a distinctive episode, but there is no doubt that many of the subscribers to the bible societies, tract societies, missionary associations, and other media of Christian propaganda saw themselves as strengthening an already powerful tradition of charity in their city.

The culture of philanthropy, and the intense commitment to the reformation of manners that accompanied it, also included an institution that is too easily seen as purely

functional and therapeutic: the hospital. Bristol **Infirmary**, initiated in 1736, was entirely part of the **reformatory aspect of civic life**, and remained so even when **its governors and staff were clearly aligned** with the Tory, anti-Whig elements in the city's political life.

The business of Infirmity-based medical relief, throughout the period **discussed** in this thesis, should be taken to be part of the reformation of conduct: in Bath, for example, the hospital **was one of** the most important practical **means by** which the city was kept tidy for the all-important tourist visitors. In Bristol, the Infirmity **was financed** in its early years by individuals **drawn from** a variety of religious **persuasions**, even though it rapidly **became associated** with Tory interests. By 1820 or 1825, as will be **discussed** later, the Infirmity **was indeed seen** as a virtual **conservative** stronghold, but the history of **its sources** of funds may well be a gradual diminution in the variety and even social **range** that characterised its early years. **Even as a speculation**, this idea fits well with the historical intuition **that class** stratification did indeed become more obvious in the history of institutions as the eighteenth century turned into the nineteenth.⁷ But the wounts available to rich individuals to dispense as chanty remained considerable, throughout the century: Richard Reynolds, (1735-1816) who married Abraham Darby's daughter in 1757 and acted as a business manager at

Coalbrookdale before retiring to Bristol in 1804, left over £200,000 for charitable institutions in the city. Much of this came from investments in land in Monmouthshire. Reynolds, like the Harford family in their eighteenth century form, had contributed to the ideal of the 'quaker-philanthropist'.

But neither the enforcement of social hierarchy through the dispensing of charity (and, in medicine's case, the particularly concrete claim that the generous subscriber was visibly doing good by recommending his patient), nor the brief moments of patriotic Protestantism that might unite the citizens of the city, under the fireworks, should be taken to conceal the gradual stratification of cultural activity that increased throughout the eighteenth century. A good example here is the Bristol Library, whose records have been examined (in part) by Kaufman.⁸ In 1782, the elegant building on King Street, near the Theatre, appears to have had 137 members, who paid two guineas for the satisfaction of membership. By 1798, membership had risen to 198, but so too had the fee, now set at four guineas. There can be little doubt that, fairly high as these entry fees were, the Library was not meant to attract a clientele from all parts of the social spectrum. It may (although this is obscure) have allowed Samuel Taylor Coleridge and Robert Southey to sit by a fireside and briefly ponder the merits of Jacobinism and the disadvantages of Prime Minister Pitt.⁹ But

the existence of the Bristol Library should not be taken as evidence for the popularisation and wider distribution of books and ideas in late eighteenth century England: it is far more a sign of the beginnings of restricted access to arenas of discussion or the perusal of books, a process that would lead to the founding of the Bristol Institution for the Advancement of Science, whose exclusivity, in the 1820s, affronted even moderate correspondents to the liberal paper, the Bristol Mercury. The Bristol Library, in the period from 1770 to the late 1780s, permitted the subscribers to indulge in the reading of travel literature (Hawkesworth, Brydone), or the works of Chesterfield, Hume and Goldsmith, and, of course, Tristram Shandy. But as Kaufman valuably points out, the extent of enthusiasm for 'the sciences' was low; as for works of medicine and anatomy, these were shunned. Within 'the sciences', works that came closest to exotic natural history, such as J.A. de Luc's Lettres philosophiques et morales sur l'histoire de la terre et de l'homme, of 1779, were the most favoured. And Joseph Priestley was read by a wide range of subscribers, for a number of different reasons. But the call to serious concern about 'science', as against natural philosophy, or general literature, was not yet in evidence. Indeed, in a way that does not compare in scale or interest with other developments in early nineteenth century Britain, but may be another example of it, the call to 'science'

as part of evident **moral seriousness was part of** the attempt by the Bristolian elite (**and to some** extent of the middle-middle **class**) to indicate how far from popular culture the respectable bourgeoisie should now be. **Science was 'appropriate culture'**, both for its exclusivity, and for the sense that it represented an exact account of the conditions of Christian existence, superior, as a result, to the trivialities of poetry or the novel, and the residual occultism that scholars such as Barry have found in certain eighteenth century followers of holistic philosophy, to be discussed later.

The proposition that 'science' would indeed initiate an authoritative form of knowledge that the politically unscathed bourgeoisie could now subsidise and take seriously (in contrast to the eighteenth century emphasis on belles-lettres) is not merely evidenced by the foundation of societies for that express purpose in the period from 1815 onwards. Bristol itself had proved a starting point for the one writer who would eventually come to generate a whole theory about the importance of this intellectual project as part of reactionary rebuilding after the French Revolution: S.T. Coleridge. 10

The question as to how Coleridge managed to become the spokesman for the necessity of a scientific conservatism that could almost become a national ideology will always be a difficult **one. But as** Morrell and Thackray, among others, have shown, the 'Coleridgean programme' is an extremely useful framework upon which to hang the description

of the rise of scientific organisation in early nineteenth century Britain. Put tersely, Coleridge was mapping nothing less than the beliefs and position of a new cultural idea: that of a national intelligentsia. But what the foundations of this project were, in Coleridge himself, is mysterious. The most powerful response that he appears to have had, both to the events of the French Revolution and to certain episodes in his own life, was revulsion, and it may well have been a general revulsion from any number of events, social and psychological, that provided the energy for the exhaustive, often obscure, proposals that he made for the need for a scientifically informed 'clerisy'. A historian of Bristol can also speculate that he must have been highly impressed by the opinions of the physician and chemist Thomas Beddoes, who will be discussed in the next chapter. And the existing private correspondence of Beddoes is a virtual daily diary of despair over the political events across the Channel. While it is true that Coleridge himself was not the recipient of these letters, there can be little doubt that Beddoes, politically active in Bristol with the young Coleridge, would have discussed the gradual collapse of constitutional revolutionism openly.¹¹

Coleridge's political revulsion cannot, of course, explain his developed hostility to any science that came to have French associations. But some source for the developing of what he called his 'moral copula', his attempt to connect natural history with political history, may well have been in his (buried) relationship with Beddoes, and the various

continental writings (such as Kant's) which gave him the introduction to synthetic thinking that he could go on to develop as a counter-revolutionary ideology that came to be attractive in the years after the French wars were over. The measure of Coleridge's flight from the quasi-radicalism of his Bristolian experience can be judged from the fact that even the work of his erstwhile friend Humphry Davy came to seem tainted with atomism. And he was naturally elected to an honorary membership in the Bristol Institution, in the first proper year of its existence, 1823. He appears to have shown little interest in the affairs of the Institution up to his death. 12

The setting up of the Library in King Street, and the slow but eventually successful inauguration of the Bristol Institution, indicate a gradual move towards the formation of educational milieux deemed appropriate by Bristol's commercial and professional classes. But the early years of the nineteenth century were not economically fruitful, and it is a measure of the anxiety of Bristol's elite to procure worthwhile examples of cultural seriousness that persistence was shown even in bad times.

For the times were indeed hazardous: the spa at the Hotwells lost its social cachet; there were food riots in 1783, 1795, and 1800, and bridge toll riots in 1793; West Indian merchants were to be troubled by the economic effects of the Clarksonian anti-slavery movement; a large number of small banks went bankrupt in the mid-1790s.¹³ The movements of political, indeed emotional unification that were

generated by the volunteer movement in the period 1798-99 could not conceal the **fissures** of social division, which were themselves to be paralleled in the organisation of cultural institutions. And these divisions were certainly happening within the religious orders of the city, with the enforcement of Anglican and Unitarian alliances and the segregation of other sects, including aristocratic Methodism. Latimer's Annals for the new century actually begin with an evocation of a disappearing world, the world where the merchant dwelt near his warehouse, and the trader lived over his shop. The geographical enlargement of Bristol, into the salubrious suburbs of Clifton and Cotham to the north, and the poorer areas of St Philips and Bedminster to the east and south-west, enforced the new social divisions.

The first twenty years of the nineteenth century saw **continual social difficulties , including attacks on the food markets of the city that were not announced in the press.** In another world, elegant dwellings in Clifton remained unsold, especially the spectacular terraces at Bellevue and Windsor Terrace. Posts in the Corporation - especially that of mayor - were continually refused by those offered them: one man who refused, John Edgar, in 1805, was fined £400 as a result. In 1809, Bristol's links with the Spanish wool trade were weakened, a fault not assisted by the need for the Corporation to fund itself through the high port dues mentioned earlier. The popular political discontent that was to erupt in 1831 and 1832 was forecast in 1810, when the arrest of Sir Francis Burdett catalysed, in April, a full scale assault on the Mansion House as the Recorder, Sir

Vicary Gibbs, came to open **the assizes**. The mining community of Kingswood **was a** virtual bandit stronghold throughout the period of the Napoleonic Wars.

The relative improvement in economic and social affairs in the 1820s and 1830s was not by any means a major turning point in the fortunes of the city. Bankruptcies continued, and trade was slack. But the era of Reform had to be the chance for the strengthening of bourgeois aspirations, even if the pressure for reform among Bristol's established middle class did not bring the zest for political alteration that was evident in areas without any political representation. And the important point about Bristol's municipal government was that many of its officers were ambivalent on politics in crucial ways. Thus, the Recorder of the city in 1831, Sir Charles Wetherell, was popular with working-class opinion for a good reason: his outright hostility to Roman Catholic emancipation. Wetherell was, however, as equally opposed to political reform as he was to Catholic emancipation, and made continual remarks to this effect in the House of Commons. This, and a mixture of local incidents and mishaps, led to the spectacular riots of October, 1831, when the main buildings representative of Corporation life (and power over life) were destroyed: the Mansion House, the prisons, the Bishop's Palace, the Custom House. The flames were said to have cast a glow visible from Chepstow. 14 The violence of the days of rioting was quite outside the control even of the reformers: the good offices of the political unions were refused by the mob leaders, until the violence had subsided.

The riots of 1831 are important for the background to the polite culture of Bristol in these years because **they bring out the exposed position of the local bourgeoisie, an exposure actually increased by the Reform Act of 1832** and the municipal reforms of the mid-1830s. In the seething world of 1831, 1832, the representatives of the general populace came to feel that the Reform era was a trick, leaving benefits only to the 'respectable' middle-class and with the same local politicians in control. The unstamped press, excellently catalogued by Andrew Hart, was full of **a sense** of betrayal. is

But it was within this stratified isolation that the culture of science and medicine in Bristol from 1820 or 1830 would have its brief existence. The need for progressive institutions was felt by a social community not dedicated to general social progress, in fact a community acutely wishing to represent the ecclesiastical and social traditions that made up Bristol's past, that seemed embodied, above all, in its cathedral. Part of the theme of this thesis is that the desire to finance institutions of 'science' did- not at all mean the commitment to major social change, or the desire, on the part of the subscribers, to collaborate with radical views of society or politics. **Reform was retrenchment, not just its accompanying theme.** The brief, slightly insipid, quality of Bristol's scientific world in the period up to 1850 cannot be understood without emphasising this fact.

Bath receives a different kind of treatment, being

examined with less detail than Bristol, and mainly in an eighteenth century setting and by concentrating on the position of the medical profession in a tourist economy, with subsequent tensions. It is hoped that in both cases, the nuances of social structure, and of local history itself, help to illuminate the intellectual events described.

Footnotes to Chapter 1

1. I. Inkster, 'Approaches to the origins of the industrial revolution in England', paper delivered to the history of medicine seminar at University College London, on November 23 1983.
2. J. Morrell and A. Thackray, Gentlemen of Science, Oxford, 1981.
3. The secondary texts condensed, for this chapter, are J. Latimer, Annals of Bristol in the eighteenth century, Bristol, 1893, and J. Latimer, Annals of Bristol in the nineteenth century, Bristol, 1887; E. Ralph, The Government of Bristol 1373-1973, Bristol, 1973; P. McGrath and J. Cannon (eds), Essays in Bristol and Gloucestershire history, Bristol, 1976; and various typescript chapters of a forthcoming thesis by Jonathan Barry of St John's College, Oxford. Latimer's Annals may seem over-cited in the course of this, and later, chapters. As all historians of the city of Bristol know, it deserves this recognition, simply for being a formidable accumulation of information on the city. See also B. Little, The city and country of Bristol, London, 1954, which is continually useful, and R.A. Buchanan and N. Cossons, The Industrial Archaeology of the Bristol region, Newton Abbot, 1969.
4. I am grateful to Dr P. McCartney for this reference, which comes from a letter from C. Daubeney to H. de la Beche dated April 28 1825, in the de la Beche papers.

5. **See especially the work of Linda Colley, John Brewer**
and Roy Porter: L. Colley, in defiance of oligarchy
Cambridge, 1982; J. Brewer, Party Ideology and Popular
Politics at the Accession of George III, London, 1976;
and Roy Porter, English society in the eighteenth
century, London, 1982. The pioneering work of E.P.
Thompson suffers to some extent from refusing to face
the full force of English xenophobia and nationalist,
monarchist feeling.
6. J. Barry, 'Civic life and urban values in eighteenth
century Bristol', unpublished lecture paper, 1984.
7. This is partly to do with the formalisation that
institutions bring, separating them away from the
'open' world of itinerant lecturers and informal clubs.
8. P. Kaufman, Borrowings from the Bristol Library, 1773-1784 :
a unique record of reading vogues, Charlottesville,
Virginia, 1960. No person who kept a lodging house,
tavern, or coffee-house was permitted to subscribe to
the library (page 131).
9. P. Kaufman, 'The reading of Southey and Coleridge: the
records of their borrowing from the Bristol library,
1793-98', Modern Philology, 1924, 21, 317-20.
10. Among the vast number of studies and commentaries on
Coleridge, see R.J. White, The political thought of
Samuel Taylor Coleridge, London, 1938; T. Levere, Poetry
realized in nature, Cambridge, 1981; and K. Coburn
(general editor), The collected works of Samuel Taylor
Coleridge, London and Princeton, 1969-.

11. **The correspondence referred to here can** be found in the archive of Davies Giddy/Gilbert, housed at the Cornwall County Record Office, Truro, Cornwall. See also the editorial introduction to the modern edition of The Watchman, edited by **Lewis** Patton, London and Princeton, 1970.
12. The first of the honorary **members of** the Institution, or, strictly speaking, its annexed Philosophical and Literary Society, were Davy, Southey and Coleridge, all of them past inhabitants of Bristol but not involved with the attempt to found a philosophical community. See also J. Cottle, '26 manuscript letters to Southey 1804-37', manuscript in Bristol **Reference** Library 20877, letter of April 12 1836, where it appears that Coleridge might have been contemplating giving some lectures to the BI in its early days, but was diverted.
13. J. Latimer, Annals of Bristol in the eighteenth century, for the years 1793 and 1794. On Clarkson, see P. Marshall, The anti-slave trade movement in Bristol, Bristol Historical Association pamphlet, 1968.
14. J. Latimer, Annals of Bristol in the nineteenth century, 167.
15. A. Hart, Catalogue of periodicals printed in Bristol 1820-40, typescript in Bristol **Reference** Library, B 26610. A thorough and important study of crowds (and riots) in Bristol at this time is J.M. Harrison, The crowd in Bristol 1790-1835, University of Cambridge, Ph.D. thesis, 1983.

Chapter 2

Previous studies of the history of science and medicine in the Bristol area have had to testify to the patchiness of any organised activity in these areas, outside the informal settings of the medical clubs and the sporadic appearances of itinerant lecturers.¹

The activities of the Bath Philosophical Society, informal as they may have been, indicate a slightly more committed group of local savants in that city than seems to have been the case with Bristol, although this may be a historical inaccuracy produced by the absence, so far, of a detailed history of eighteenth century Bristol. It is instructive that the Bath and West Society for the encouragement of Agriculture was founded in Bath while having, as one of its areas of concern, 'the city and county of Bristol'.²

Bristol's medical men in the period 1770 to about 1790 did not contain figures with the intellectual reputation of Bath's William Falconer (1744-1824) or Caleb Hillier Parry (1755-1822). Falconer wrote extensively on diet, regimen and the Bath waters, but was also estimated for his general writings on environmentalism. Parry was notably eclectic in his interests, these ranging from agricultural matters and natural history to detailed studies of the pulse and on goitre. They will appear again in, chapter 3, which will be concerned with Bath in the late eighteenth century.

In the case of Bristol, the only two major examples of work in, say, the earth sciences are E. Owen, Observations

on the earth, rocks, stones and minerals for some miles about Bristol, of 1754 and the Reverend A.S. Catcott's A treatise on the Deluge, of 1761. In addition to these, the botanical work of Dr. Arthur Broughton (c.1758-1796), has recently received attention, particularly his studies of the flora of Jamaica.³ There is certainly very little concrete evidence that the sporadic practices of 'natural philosophers' had any impact on commercial or economic activities in the eighteenth century, or indeed beyond, in the South-West region. Exceptions to this proposition may be to the point in relation to (some) canal-building and **(some)** mining activities.⁴

The geological work of Alexander Catcott, (1725-1779), presents an interesting paradox, indeed a hiatus in the development of the 'science' of geology, and in the relationship between scientific and philosophical speculation, theology, and empirical observation.⁵ The work of Catcott, when his public text of 1761 is compared carefully with his private notebooks and correspondence, points up the difficulty of maintaining a strict correspondence between public utterances and theological commitments when brought up against the contradictory evidence of empirical observation in the field. Catcott himself was entirely committed to uniting the propositions embodied in a philosophical system to which he was attached - that of John Hutchinson (1674-1737) - with his geological field work. His Treatise on the Deluge embodies this commitment. But strains appear to the historical investigator that show up some of the

difficulties of matching a complex theory of matter with sustained observation in the field.⁶

The importance of the Catcott example from the point of view of the background to developments in nineteenth century Bristol is that it brings out the affinities between 'scientific' research and conservative, High Church, Tory ideological commitments. Despite the fact that his interest in the anti-Newtonian position initiated by John Hutchinson placed Catcott outside the 'latitudinarian' tendencies of Newtonian apologetics discussed in the work of M.C. Jacob,⁷ his work became part of the controversies over theories of matter that were crucial in eighteenth century science.⁸ Catcott provides an example, in an albeit perverse and minor way, of the thesis of M.C. and J.R. Jacob on the essentially Anglican origins of much modern science, and his influence, even if indirect, on later developments is noticeable. It is illuminating that such an author gained a certain fame in a thriving commercial city at the height of its eighteenth century affluence and that his work was not in any way part of a 'secularising' materialism that is conventionally attributed to Enlightenment thought. Science was instead to bear out the fine details of some very esoteric natural philosophy and provide a firm resistance to materialist appropriation.⁹ Of course, in its early nineteenth century formulation, the culture of science would make Newtonian theory absolutely part of the overall evidence for the argument from Design, and take Newton as a pivotal figure

in the evidence for God's creativity and regularity in the organisation of the Universe,¹⁰ Alexander Catcott's geology and his natural philosophy were generated out of a tradition inimical to the Newtonian project, precisely on the grounds that it contained lurking materialist possibilities - an odd view, to the nineteenth century natural scientist and theologian. But the point to be made at this stage is that the most sustained project of a 'scientific' kind in eighteenth century Bristol had no secularising element in it whatsoever: Catcott developed a theory of the earth and its formation that came instead from a religious philosophy that could seriously propose Newtonianism to be close to perversion, in its displacing of a true, Genesis-based account of how the world was made.

As. G.N. Cantor has shown in an excellent exegesis of the philosophy of John Hutchinson, the starting point of his case against Newtonian theory lay in language, and in the relationship between language and the world, as mediated by the Bible.¹¹ The history of knowledge, as it had been transmitted to the Jews, was that of original purity, followed by corruption and degeneration. Complete knowledge of nature and morality could only be gained by knowledge of the scriptures, but the philological route to this pure and original knowledge was now corrupted, symbolised by the 'confusion of Tongues'. Thus, Hutchinson argued for the purification of the --Hebrew Bible, particularly the

elimination of 'pointed' Hebrew and the massoretic signs **that had been introduced to provide symbols for vowel sounds.**¹² **Once this was done, the path to a correct knowledge was possible. Furthermore, God had provided the** observer with a sensory apparatus to study physical phenomena, since the study of nature, particularly the study of the earth, could bear out the historical narrative of the Biblical creation, properly understood. In his work of 1724-1727, Moses's principia, Hutchinson explained how he considered the opening verses of Genesis to contain a true account (and all the information) regarding the creation of the world, which could now be studied by the undeceived observer. Empirical observations of this kind would bear out the Biblical account of the formation of the earth, while the solution of the linguistic distortions in the Biblical text would compact the philological and the theological, bringing mutual strengthening.

It was out of this Hutchinsonian commitment that Alexander Catcott ventured into the field of geological observation and collection. The reason for discussing the Catcott case however is to iterate the close affinities between science and religion that pertained in this provincial context in eighteenth century England. This is not a particularly extravagant claim, nor is it meant to describe all the possibilities that 'scientific culture', in either Bristol or Bath, might produce. The prominent place of churches and charities in Bristol social life,

goes far to explaining how a practitioner like Catcott might exist in the Bristol context. But the extremity of **the High Church orientation of the Hutchinsonians is remarkable**, as Christopher Wilde has persuasively argued.¹³

From the historian's point of view, one effect of this philosophical legacy was that Catcott tended to restrict his dispersal of information to a limited circle, especially the Hutchinsonians, William Jones of Nayland (1726-1800) and George Horne, (1730-1792) later Bishop of Norwich. The privacy of this coterie may contribute to the explanation as to why 'scientific' culture **was an esoteric** provincial pursuit, with Tory politioa.lovertones, in this example. But that Catcott had gathered together an impressive collection and library in the course of his researches cannot be doubted. When Sir Joseph Banks saw his fossil collection in the early summer of 1767, he wrote that it was 'possibly the Best, as it is almost the most instructing **I have seen**'.¹⁴ The work of Torrens on the relatively small-scale activities of the Bath Philosophical **Society stresses** the handful of persons involved in such pursuits, and the importance of itinerant lecturers.¹⁵ Again, technological discussion at the Society was minimal, in the 1770s and 1780s, and the Bath Society could be seen as dominated by the ambitions of certain individuals, particularly Edmund Rack (1735-1787). The Bath Philosophical Society did not represent any clear-cut 'ideological' position that can be attached to a cultural theory of 'signification' or 'mediations'

with **any ease**. Bristol, at this stage, had no philosophical **society as such, and no 'representative'** scientific ideology that could **be detected as uniting a** field of committed practitioners. What Bristol had **produced was one well-regarded, learned but** private individual **whose practice was generated from a very** articulated, highly ornate theology which was then applied in the field, with ambivalent results. The hardening of the science/theology relationship that did take place in Bristol in the nineteenth century was a result both of institutionalisation and of an altered political climate. in the eighteenth century, no such crystallisation occurred, either in Bath or Bristol. It is the case that Bristol did see an institutional form develop from c.1810 **onwards, at** a time both of economic difficulty but also acute cultural sensitivity to the symbolic place of a theological **science** in a particular cultural **moment. Disagreeable** economic difficulties were not allowed to ~~rettard~~ the establishment of a scientific culture that was worth subsidising in a period of social distress and nervousness. In the relative calm of the eighteenth century, a commitment to such institutionalisation was not forthcoming. There may, then, be a historical relationship between political nervousness and the generation of fairly expensive cultural institutions, in these cases. Bath science, too, was placed on a firmer footing, at least institutionally, in the nineteenth century. 16 Thinking about the foundations of

scientific institutions in this way may be an advance on the abstract **discussion** of cultural initiatives that have come from anthropological approaches, especially those employing the 'grid-group' techniques and models of Mary Douglas.¹⁷ The isolated case of Alexander Catcott does not, properly speaking, even qualify as 'background' to the story of science in Bristol in the nineteenth century. But the unusual affiliation of science and theology expressed in his work allows one to add him as another example to the overall revising of the eighteenth century **as an** era of 'empiricism' and 'secularisation'. The first serious student of the earth produced by that city came from a quite different pedigree. In the nineteenth century, this pedigree was broadened out, the anti-Newtonian element jettisoned, and different cultural resources were called upon to keep the science/theology affinity intact. Despite the absence of historical materials that allow the historian to argue for institutional similarities between the eighteenth and the nineteenth centuries, the Catcott **example has been mentioned** in order to point up the **absence of a** community - **or even** individuals - who might be thought of **as 'secular'** scientists in the earlier period, who are then replaced, in the evangelical reaction of the early nineteenth century, by theologically orthodox natural philosophers.¹⁸ This is not the case in Bristol, and simply **reflects** the fact that **men such as** Catcott were church

divines, not materialist, 'Continental' thinkers. It is also a reflection of cultural geography; Erasmus Darwin could thrive perfectly well in a Midlands provincial context, but would have been an unlikely figure to have appeared in the native, church and charity dominated milieu of commercial Bristol, in the late eighteenth century.

Catcott's work is a tiny episode in the history of 'science' or natural philosophy, but two further points may be made: the first follows from the historiographical researches laid out by Simon Schaffer.¹⁹ Catcott's work cannot be discussed as a 'scientific' project, as the nineteenth century might have discussed the term, since his fieldwork and empirical studies were part of a philosophical anti-Newtonianism that did not separate the 'empirical', as 'scientific', from the philosophical. The contradiction that the historian can see between the public and private Catcott is stressed because it permits what might at first seem a scandalous thought - that the excellence of Catcott's observations on the ground and their lack of easy fit with his Hutchinsonian predilections forms part of a historical study of the making of a 'science' of the earth - a science being constituted partly out of an object of natural enquiry (in this case 'the earth') that slips away from the philosophical framework that was the original, demanding and imperious reason for the initiation of the project in the first Instance.

The generation of a 'science' from this anomaly, is

as it were. accidental? since the original purpose, in a **case such as Catcott's is to annex, without controversy,** the natural to the spiritual, and not to produce disorder or contradiction. This was the Hutchinsonian imperative, as it was to be the evangelical imperative for nineteenth century practitioners in fields **as diverse** as ethnology and geology, anatomy and philology. It is a moot point whether the fate of the 'anomaly' is correctly thought of as advertising the mechanism by which science emerges

(a Kuhnian possibility) or a sign that a science has not yet emerged (a Bachelardian proposal).²⁰ The Catcott example is too small to give much in the way of an answer to this intriguing and important methodological question. But, in the evangelical atmosphere of the early nineteenth century, similar imperatives would be at work on 'scientific' practitioners, with similar contradictions generated.²¹ Thus, the practice of natural philosophy **and/or 'science'**, and the history of that practice, cannot be separated from (so-called) 'extra' scientific factors. Catcott had produced a remarkable body of work that contributed to a larger enterprise whose final end would be the undermining of non-naturalistic explanations of the 'natural' order.²²

The historian of local provincial intellectual culture in the West of England in the eighteenth: century is faced, inter alia, with the question **as to** what particular part of the community might be expected to generate and organize an intellectual culture. Even in the relatively tolerant

atmosphere of eighteenth century England, this need not be construed as a search for a 'secularising mission among such groups - a 'liberal' clergy might provide one possible intellectual source. More promisingly, historians have taken an interest in the activities of medical men.²³ The absence of a professionalised body of medical practitioners, and the abundance of so-called 'quack' practitioners, need not be taken as historical reasons for the absence of some forms of institutional development, outside the drinking and debating clubs of conventional medical society. But again, in both Bath and Bristol, the eighteenth century story is one of sporadic activity, without a central driving force being provided by ambitious medical practitioners. In Bristol, medical 'domination' of local scientific activity was delayed until the 1840s, by which time the extent of such activities themselves had become diminished from even twenty years previously. The position in Bath is somewhat different.

As will be more fully discussed in Chapter 3, eighteenth century Bath did not produce a strong, independent philosophical society or community of practitioners. The Bath Philosophical Society was the pet of individuals - like Edmund Rack - or the springboard for ambitious men like William Herschel (1738-1822). Itinerant lecturers came and went; so did the audience for cultural and social affairs. Bath was a tourist town.²⁴ But its

situation, and commercial relations with an ,tinerant **community of visitors and strangers**, also produced unusual divisions within its medical community. Despite Bath having what was probably the biggest concentration **of quacks, physicians, surgeons, and apothecaries outside** the metropolis, and thus leading the historian to the possibility **that some** kind of scientific/philosphical culture might be generated thereby, no such event happened. The danger here of course is that of anachronism - searching for a 'modern' idea of organised science in a quite different historical **landscape**. But the established medical community in Bath, which included **men such as** William Oliver (1695-1764), Archibald Cleland. (**dates** unknown), Charles Lucas (1713-1771), and William Falconer, not to mention the contributions of David Hartley (1705-1757), and Caleb Hillier Parry - this community was well established, protectionist, i.e. concerned to police the modes of access to the Bath mineral waters against outside invasion; and, as a result, unconcerned with philosophical or technological issues. The only controversial debate that took place within the medical world was over the chemical composition of the Bath waters themselves, particularly the issue as to whether they contained sulphur.²⁵ It is argued in Chapter 3 that this **debate sees** the sulphur **issue** being used to mediate certain individual **interests and concerns**: local physicians argued for the potency and

usefulness of the waters; **outsiders** such as **Charles Lucas**, whose commercial position **was less secure**, could end up **scorning** these native **claims**, and casting doubt on the integrity of local physicians and their accounts of the quality of the **waters**.²⁶ The medical community, for whatever reason, remained either combative or protectionist, non-philosophical, and belle-lettrist. No self sustaining philosophical culture was produced in the city, unlike larger centres, above all Edinburgh, or even the semi-organised efforts which went to make up the Lunar Society of Birmingham. But Bath is certainly not being portrayed as cultureless; the emphasis instead is that the itinerant, **seasonal** nature of the city's tourist market helped shape the sporadic nature of philosophical and intellectual activity. The Bath economy generated an intellectual milieu en passant; activity, whether the geological work of William Smith, the activities of William Herschel, or the career of the local Philosophical Society was transient and momentary. A second Bath Philosophical Society formed in 1799, also had a brief existence. The fiercer energies that made medical men in, say, Sheffield 'invest' **in science were** missing in the Bath example; this might be connected to the relatively assured position of the Bath medical establishment: lacking marginality, there **was no** 'spur' or 'goad' to the pursuit of polite, rational scientific discourse.²⁷ Research into the religious and social structure of Bath would no doubt bring out other reasons for the (relative)

absence of the pursuit of 'scientific' Identity, of 'high visibility' among the city's interested parties.

Neither of these West County centres produced a particularly strong strain of scientific or philosophical endeavour in the late eighteenth century. This situation was to alter in certain respects, over the early decades of the nineteenth, but in the Bristol example one other episode requires comment, since it is a good example of an 'imported' scientific circle, one that had its origins in the relatively lively world of Edinburgh, Oxford and Birmingham, which, when transported to the vicinity of Bristol (i.e. its suburb, or village, of Clifton) went through an ambivalent fate. This is the circle that surrounded the chemist and medical practitioner Thomas Beddoes (1760-1808).²⁸

A number of scholars have begun to revise some of the suppressions and silences that the 1811 biography by J.E. Stock of Beddoes contains: no attempt is made to reproduce this here. Rather, the point of interest is that when a conjunction did occur, in Bristol, involving medical and scientific practice, and one that set out with considerable hopes of effecting an alteration in the nature of late eighteenth century medical practice, it was not a product of Bristol, but an import from elsewhere. Beddoes, friend of Erasmus Darwin, had transported something of the sturdiness of the Midlands scientific ideal into the Bristol situation: the question would be whether his project

- the application of 'pneumatic' chemistry to medicine and its social relations - could be successfully carried out. Beddoes was not, properly speaking, a Bristolian figure, but an important arrival in the city who would attempt to establish his own institute and his own methods in a local environment that was not always friendly to him. **Beddoes' career** is also of interest to the historian of medicine since it is an example of an attempted reform of medical practice in the light of the 'chemical revolution' of the late eighteenth century: an attempt to break with orthodox therapeutics, particularly by the use of gas; and an attempt - at least ostensibly - to make medical reform part of a generalised social democratisation. There now seems good evidence *for* doubting the degree **of success** of this project, not least in its attempt at altering medicine's hierarchical relations. It is also not the **case** that this dissertation argues that Beddoes' project was defeated because it was unhappily rooted in Clifton and Bristol; this may be a contributory factor, but there were undoubtedly 'internal' reasons for the peculiar fate of the 'pneumatic project', and the ideas of life, partly derived from John Brown, partly from Erasmus Darwin, that underlay it. 29 Beddoes' commitment to dealing with the dreadful effects of consumption, and his interest in preventive medicine, could not escape a number of contradictions , some medical, some social, that surrounded it.

Beddoes read medicine at Oxford In the late 1770s; he translated or edited Bergman, Scheele and Spalanzani. In 1781 he studied in London under Dr. John Sheldon, pupil of William Hunter; in 1784 he continued his medical education at Edinburgh, and became President of the Natural History Society. He found Cullen's lectures dull and did not attend them; Gregory's clinical lectures were more agreeable. Most biographical sources agree that Beddoes found the research of Joseph Black easily the most interesting. It is also likely that he discussed the Brunonian theory at Edinburgh with the visiting Christoph Girtanner. In the winter of 1786 Beddoes qualified as a doctor and took his M.D. at Oxford on December 13th.

He visited France in 1787-8, and was then appointed reader in chemistry at Oxford. His visit to France and his meeting with Lavoisier and Guyton de Morveau led to an adherence to the antiphlogistic chemical system and to a hope that pneumatic medicine would bring major changes in public health. True medical science would have to have a chemical basis, and Beddoes was also familiar with the chemistry of airs as discussed by Scheele and Priestley: this would be the main line of advance. He had, in 1790, edited and published extracts from the writings of the Bath chemist John Mayow, drawn to these by their account of the chemistry of respiration.³⁰ It seems reasonable to argue that Beddoes, for his own reasons, exaggerated Mayow's originality. It also seems reasonable to assume a personal

interest, on Beddoes part, in respiration, since he was notoriously short of breath. 31

Beddoes was acquainted with the work of Midlands based chemists of a practical bent, such as James Keir, and approved of their utility (in Keir's case, the manufacture of soap, at Tipton). The application of chemistry to medicine was an extension of the utility principle. 32 This practical interest was paralleled by certain clear political beliefs, of a conventional 'liberal' kind: abolition of the slave trade; hostility to authoritarian government; early support for the French Revolution that then declined in the wake of the September **massacres**. 33 Doubts about the course of the French Revolution did not make Beddoes completely acceptable in conservative circles however; he had a reputation for democratic tendencies which contributed to his not gaining the Regius chair in chemistry at Oxford. 34

Beddoes established himself in Bristol with assistance from a number of figures in respectable society, particularly Richard Lovell Edgeworth (1744-1817). And he maintained contacts with his Midlands friends, especially **Erasmus** Darwin and the Wedgwood family. In no real historical **sense can** Beddoes be said to provide a 'Jacobin' alternative to the existing hierarchical relationships of orthodox medicine: the differences were not political, but lay instead in Beddoes's conviction that a breakthrough could be effected in 'pneumatic' medicine for the cure of diseases,

and that a change in the nature of physic would be accompanied by a change in the nature of physicians, surgeons and apothecaries. As a social figure, Beddoes retained his orthodoxy, and seems by the end of his life to have delivered his affairs almost entirely into the hands of his friend, the conservative parliamentarian Davies Gilbert (Giddy) M.P. (1767-1839).³⁵ Certainly, Beddoes was active in opposing Pitt during the 1790s, and, alongside Quaker figures such as the physician Edward Long Fox (1761-1835), was opposed to the Treasonable Practices Bill and the Seditious Meetings Bill. S.T. Coleridge initiated his magazine The Watchman in March 1796 to further this Bristolian opposition to repression, and Beddoes in his review work for the Monthly Review of the younger Ralph Griffiths, had drawn attention to the work of Kant on the need for peace in international affairs.³⁶ But this did not put Beddoes in any particularly 'radical' position, and his friendship with, and dependence on, Giddy/Gilbert, the Edgeworths and the Wedgwoods, always remained. He had imported a part of the Midlands connexion into the environs of Bristol, and drew support from that connexion, whatever his involvement with local affairs, such as the attempt to set up rooms for philosophical discussion in June 1798,³⁷ In an earlier letter, of 1795, Beddoes had noted that the contributors to his own pneumatic Institute were More respectable than I supposed %i38 Not that things

went easily for Beddoes on these fronts: his known radicalism was a source of censorship from the local Dean and Chapter when attempting to acquire rooms for lecturing in the late 1790s.³⁹

The project for pneumatic medicine that Beddoes initiated must be placed in a wider context than that of Bristol or his own personality. Beddoes was of the opinion that the work on the 'laws of life' that were drawn up by such as Volta, Galvani, Erasmus Darwin and, to a lesser extent, John Brown had reoriented medical science. Combined with the practical applications possible from the advent of the new chemistry, medicine itself could change, and the traditional therapeutics be overthrown. The work of Erasmus Darwin, for example, would lead to the cessation of apothecaries dispensing 'their slops' in the old way.⁴⁰ The understanding of excitability and activity within the human frame would lend itself to chemical intervention: oxygen would be especially important. And, importantly, the moral life of patients would be changed, since knowledge of how the body was equilibrated would necessitate alterations in behaviour, diet and social manners. Beddoes at no point envisaged the disappearance of physicians under this new system of medicine: nor can he be classed with that development in the notion of medical police that has attracted the past attention of historians of medicine.⁴¹ Beddoes appealed to an idea of medical history himself, particularly by his praising of John Mayow and a chemical

physiology that could now come into its own. He also argued, late in his life, that medical students required longer training, of at least five years, on the Continental models, than that which contemporary students received.⁴² Beddoes' writings both acknowledge the possible reconstruction of medical practice via pneumatics, while also conveying a traditional patriarchal tone of address in the manner of advice books in medical literature in general: he could both criticise Hannah More while being part of the culture of advice-giving that eighteenth century physicians had accorded themselves.⁴³ This is the historical contradiction of the semi-Brunonian programme in the late Enlightenment; a contradiction between opposition to orthodox physic, often accompanied by political opposition to authoritarian regimes, but proposing a socialised medicine that had medical men as the guarantors and overseers of a 'healthy' social order. Beddoes was certainly arguing for a sounds morally improved society, free of despotism and the tyrannies of slavery. But the physicians of his own persuasion were to be the new legislators: authors, like Beddoes, writing on chemistry and medicine, as well as work of advice to the agricultural poor, such as his History of Isaac Jenkins, and of the Sickness of Sarah his wife, and their three children, of 1792. By 1802, Beddoes' use of the 'medical advice' genre had lost its radical element, and he authored the lengthy, opinionated and commercially expensive Hyg6ia, in three volumes. Its subtitle shows how far Beddoes had come to limit the audience

he hoped to address: Essays moral and medical on the causes affecting the personal state of our middling and affluent classes.

Concrete accounts of the activities of the Bristol Pneumatic Institute, and the number of patients treated, and for what, are not plentiful, despite Beddoes' avowed commitment to numerical methods in medical analysis. Until a full biography of Beddoes is completed, accounts of the Institute must rest content with snippets: such as the remark of his wife, Anna, that 300 poor patients were seen in July 1803, for a variety of complaints, but including consumption. The orthodox biography of J.E. Stock contains the retrospective statistical claim that ten thousand patients, many from distant parts, had attended the Pneumatic Institute from its foundation to 1804. Beddoes stated that the proportion of consumptive cases from a total of 9728 patients was high, and that this was not exceptional. It could be said that Beddoes was actually exaggerating the numbers of consumptive cases, as the table below suggests. He drew up this table with his assistant, the surgeon John King, for the period January 1st to April 18th, 1802, which provides the following information:⁴⁴

Disorders	No. of Cases
Fevers	20
Colds and Coughs	38
Shortness of Breath	22
Hooping Cough	36
Consumption	52

Rheumatism	43
Stomach Complaints	59
Hysterics and female complaints	98
Disorders of the Skin	41
Epilepsy and Catalepsy	15
Worms	12
Dropsy	12
Scrophulous, in all	89

In his published writings, starting with Observations on the Nature and Cure of Calculus, sea scurvy, consumption, catarrh and fever, of 1793, Beddoes confined his descriptive method to a careful account of the effects of oxygen - or its absence - on this variety of diseases. Dr. Thomas Trotter's findings on the amount of scurvy in slave ships were related to the position of men, women and children on, or below, deck; careful accounts were given of apparatus and experiments with gases, including self-experimentation with oxygen by Beddoes himself. But Observations is correctly described as a work of defence and promulgation, not a statistically based study of the medicinal effects of gas.

With the encouragement of Joseph Black, James Watt, various Edinburgh savants and the support of Midlands friends, as well as medical practitioners such as Dr. Currie of Liverpool; and - not least - with financial aid from Lord Lambton, the Duchess of Devonshire, and Tom Wedgwood, Beddoes founded his Pneumatic Institute, (1799).

His first scientific assistant was the young Humphry

Davy,⁴⁵ and Davy helped Beddoes, particularly in the production of nitrous oxide. The Institute may have housed about half-a-dozen in-patients; no coherent account exists of the 'out-patient' dimension. Beddoes continued to publish in the descriptive, non-statistical manner, on these questions.⁴⁶ Beddoes also provided an entree to works of German metaphysics for S.T. Coleridge, and a springboard for Davy, who left for London in 1801 to become both a 'scientific' and a 'theatrical' success at the Royal Institution.⁴⁷ This may provide some evidence for stressing the extent to which English Romanticism, in this example, was schooled by the readings and sympathies of a physician with Continental perspectives, including Kant, Klaproth (especially his chemical experiments) Johann Christian Reil, Johann Friedrich Blumenbach, and C.W. Hufeland. In the case of Coleridge, as Levere has suggested, Beddoes' discussion of Everard Home's edition of John Hunter's Treatise on the Blood may have developed into a more wideranging influence, of vitalism and holism as a philosophical topic in itself. On the other hand, Beddoes felt it necessary to champion Volta, as a materialist, against the arguments of physicians like Dr. John Ferriar (1761-1815), so Coleridge's reading may have been idiosyncratic.

Beddoes could not maintain a complete commitment to the use of gases in medicine; it could however be argued that his statistical analyses (modelled on Sinclair's

statistical account of Scotland} became more systematic, particularly on the effects of \$nitrous acid\$ in the treatment of venereal diseases, among sailors, and on the relationship between consumption and occupation.⁴⁸ Also, as the pneumatic enterprise diminished in scale, Beddoes became more explicitly involved with preventive medicine; other historians have traced this alteration in his career, but one small difference between Beddoes' practice and those of conventional practice might be emphasised. Access to medical relief, for example in the dispensary system, would be controlled by the necessity of having a subscriber's recommendation to allow entry. This was the method employed to control access to the Bristol dispensary and the Clifton dispensary. At the Beddoesian Preventive Medical Institution, Beddoes insisted that a patient deposit 2/6d which would be returned once the physician had decided that treatment was complete.⁴⁹ The 'language of authority' - or what Beddoes called the 'style of authority'-would, on this system, be reduced, and the poor more likely to continue a course of treatment without disappearing early. On the claims for the efficacy of this distinction, a good deal of the historical judgment for Beddoes' radicalism' as a physician might be said to rest. The substantive content of his advice giving had become standard Enlightenment orthodoxy: diet, regimen, avoidance of 'incontinence, fresh air. Beddoes' amalgamated concerns - Edgeworthian pedagogics, laws of physical fitness, applied

ideas of bodily equilibrium - **came** together in his final **works**. No serious suggestion was put forward that the position of physicians in culture is exaggerated; what is argued for is a different orientation, on continental lines, in an England free of Pittite authoritarianism and social profligacy. But he charged private patients fees similar to those of the famously wealthy Erasmus Darwin, (often ten guineas a day) and also used conventional methods - opium, or digitalis - when necessary. 50 On the other hand, he supported and expressed concern for figures such as the Swiss refugee surgeon Johann Koenig - John King - and employed him in the Pneumatic Institute and at the Preventive Medical Institution.⁵¹

Born in Bern, Switzerland in July 1766, King gave up ecclesiastical office early in life and became an atheist and eventually a Freemason. He was a skilful engraver and painter. On arriving in England he trained in London under John Abernethy, and also served as an ensign in the 2nd Shropshire regiment in 1799. In 1800, he travelled as a surgeon with Tom Wedgwood to the West Indies, and from 1801, worked with Beddoes in Bristol. He married into the Edgeworth family in 1802. Throughout his professional career as a surgeon, King was owed money, while also being a debtor, to the Wedgwoods, in 1812 he was owed at least £500 by patients, and although between 1808 and 1814 his practice brought him about £1300 a year, he made a bad property investment and by the end of 1814 was earning

E700 less than previous years. He did not have a circle of aristocratic patients and connexions, and did not chase up debts. He described himself as displaying 'disinterestedness, an absurdly misplaced character in the vicinity of Bristol'. In the changed medical world post 1832, King spoke of increasing political bigotry, the falling off of patients, and of 'scrambling' for money in the medical market. In 1807 and 1810, he had failed to gain election to the Bristol Infirmary; in 1836, he heard his friend Beddoes being mocked by the geologist, the Rev. William Buckland, at the Bristol meeting of the British Association for the Advancement of Science. 52

King's career is interesting partly because it catches the relationship between Beddoes, his circle, and the Bristol world they flanked: hostile but occasionally respectable; aware of the metropolitan success of Humphry Davy, yet not celebratory of Beddoes' part in that story; suspicious of a figure like King but finding social milieu - art societies, medical clubs such as the Park Street medical club - where a man like King might be included.

(It is interesting, for example, how close a friend Robert Southey was, to King). The biography of King also allows one to speculate that the main work in the Pneumatic Institute and the Preventive Medical Institution was vaccination, allowing the re-emphasis that pneumatics was only one part of the Beddoesian project, which (no doubt as a disappointment to Beddoes) increasingly took on a conventional aspect as the years went by. There will be further discussion later

of vaccination facilities in Bristol, Including the Bristol Dispensary: Beddoes acknowledged the usefulness of the Dispensary, but argued that the Preventive Medical Institution embodied, or at least made possible, a different doctor-patient relationship; the poor would be cajoled into maintaining a regular attendance by the lure of the returned half-crown; access would not be subscriber dependent, and, as Beddoes hoped, these facts would be spread by word of mouth among prospective patients, who would admit to the possibility of consumption being present, either in themselves or among their families, and come forward.⁵³ This distinction in the social relations of medical assistance was Beddoes' own claim for the importance of his approach; as has been stressed, no proper historical account yet exists as to whether this made his contribution more effective than the paternalist, subscriber dominated systems practiced elsewhere. Despite his avowed commitment both to preventive medicine and to statistical method, Beddoes could be said to have failed in achieving any distinct successes in either of these two areas. Much of his descriptive style of argumentation was filled out with tables drawn from Continental sources, such as Dr. Hufeland at the Charite in Berlin, or Fritze's Annals of the Clinical Institution in the same city, or Dr. W.H.G. Remer's Annals of the Clinical Institution at Helnmstadt. While the culture of science in early nineteenth century Bristol was

to be imitative of metropolitan or Oxbridge models, Beddoes emulated continental, chemistry-oriented medicine, while not being part of medical 'police' strategies, which carried authoritarian overtones.

With only moderately cordial relationships with the city of Bristol, its municipal and church leaders, and its Infirmary based physicians, Beddoes' career has received the final accolade of medical history: that of 'failure'; .failure, in this case, to make full use of the anaesthetic properties of nitrous oxide, this 'failure' leaving Beddoes as one of a group of pioneers who were 'ahead' of their time.⁵⁴ There is another possible account, one that makes use of current research into the nature of Enlightenment medicine as a-project, and what happened to that project at the hands of the 'new' medicine conventionally associated with Paris, Broussais and pathological anatomical methods from the Napoleonic period onwards.⁵⁵

Beddoes could be said to stand at the end of a tradition of Enlightenment medicine, which assimilated Hallerian ideas on irritability and sensibility; a commitment to heavily reduced, often monistic explanations of body function (which culminated in the extreme reductionism of John Brown and Benjamin Rush); that incorporated-a_-standard environmentalist/regimen oriented physic which could be thought of as old as Hippocrates; and which culminated, (in ways that Beddoes, for example, thought were revolutionary) in a chemical addition that would at last

contribute to the proper relief of physical distress, particularly through the **gases**. And, as Crosland has suggested, none of these occurred in isolation, not even the work of Lavoisier: Europe, by the 1770s or 1780s had a 'chemical' community, that included medical men, working in collaboration. 56 The collaborative community, in **Beddoes's case**, could also be said to include geologists: the chemical analysts of Beddoes' persuasion were explicitly anti-Neptunist, pro-Huttonian, and keen to extend chemical work on granite and basalt to further the Huttonian cause. 57

Further historical investigation has to be conducted before a verdict can be given as to whether this 'Enlightenment' series of concerns came to grief at the hands of a therapeutic revolution in the early nineteenth century. It seems possible to argue that in the treatment of fevers, for example, a continuity of therapies exists, and not a radical break. 58 On the other hand, the influence of William Cullen and his disciples may have disappeared relatively quickly in the early nineteenth century, outside the fever example. Part of the answer to this question, as Garrison suggested in his History of Medicine over half a century ago, will depend on which culture (or nation) is being examined. But Beddoes himself belongs in this history, with its rejection of humoral pathology, support for 'progressive' figures such as Bloch, Schrebel, Pallas, Schmeidel and von Haller, and dislike for the inexactness and expense of

conventional, **drug-based** materia medica, **It cannot be over emphasised** that **Beddoes** regarded Erasmus Darwin's Zoonomia as a revolutionary text in the history **of descriptions of** organic life; **Beddoes own** thoughts could be said to have **shared a similar** fate in the **nineteenth** century to that **experienced** by Darwin himself. The correct siting of **Beddoes' career** in medical/historical **terms must be as one** - rather unusual - exponent of this 'Enlightenment' medicine, whose hopes for the efficacy **of gases and acids represent** the logic **of the sciences** of the Enlightenment at this time, and not the ignored founder of a tradition of anaesthetic medicine that would only arrive in the middle of the nineteenth century. As Crosland **again has** suggested, the clue will lie in the extension of scholarly **research** into the history of the reception of chemistry in the early nineteenth century 'after the revolution'. 59

Bristol philosophical activities, between about 1760 **and 1800 were sporadic and not part of a wave of 'secularising'** intellectual work. Itinerant lecturing, both in Bristol and Bath, as well as fitful gatherings of philosophically **minded men, allowed certain individuals to establish themselves, often to arrange for movements onward and elsewhere,** usually London. In the case of Catcott's geological 'community', this was notably esoteric and private. The work **of Beddoes was also different; it too was the outcome of other alliances, and Beddoes' initial celebrity and**

connections make it legitimate to argue that he expected to import and generate his own collective of interested parties, something that he partially achieved. Certainly, no study of Davy, Southey, Peter Mark Roget or S.T. Coleridge can be written without regard for the influence of Beddoes, his tastes in reading matter, or his early opposition to Pitt and the war with France. But all these men moved on, and both Coleridge and Southey could be said to have become spokesman for the increasingly conservative social apologetics that lurk behind much English 'Romantic' writing.⁶⁰ Beddoes' presence in Bristol was exotic, a strange visit from other parts of English scientific culture. When Bristol's commercial, theological and medical elite gathered their resources, from the treaty of Amiens onwards, to set up a proper philosophical and literary situation, they effected a (perhaps surprising) alliance of mercantile wealth and anti-radical, anti-Dissenting, anti-secular philosophical and literary practice. An audience of concerned merchants had become anxious, even at a time of social unease and lack of confidence, to finance a culture far closer to the legitimating apologetics of Catcott than to the philosophical aspirations of Thomas Beddoes. Bristol's established history, among its upper and middle class, of patriarchy and philanthropy, re-emerged in a distinct and troublesome social moment, to generate a brief, even decaying, conservative cultural statement.

Even the official, protected life **of Beddoes**, written by the ex-radical J.E. Stock, brings out some of the **distinctions in his medical practice, or at least theory**, which distinguish him from his local, nineteenth century **successors. A famous whist player; a defender of the** antiquity of the Hindoos against the Mosaic chronology; a proponent of the Edgeworthian ideal of rational toys for children. But Beddoes was an elitist: an opponent of quacks, of tea-drinkers, of sensualists, even of a non-scientific poetic imagination, which would run close to insanity, if accouched by alcohol. The ambivalence of his idea of medical police has some European analogues; but (despite his failure **as a medical** statistician, admitted by Stock) Beddoes still sought the medicalisation of culture, as a cure for its political backwardness. He was only one of the 'Enlightenment' figures who had challenged Pittite reaction, censorship and satire but whose critique was rendered ephemeral by the overwhelming cultural reply, based on reaction, and in which Christian science was to form an important part, that was to come. It is certainly a notable feature of Thomas Beddoes' life and correspondence, that after the constitutional element in the French Revolution had passed away during the Terror, no coherent idea of a political alternative, either in Britain or France, is described. in that sense Beddoes' medical theories and commitment to a new kind of preventive social medicine,

were not accompanied by any systematic political recommendations. This fissure in his life and works cannot be disregarded when making an historical assessment of it.

Photnotes to Chapter 2

- 1, This is the implicit message In C.M. MacInnes and W.F. Whittard (eds), 'Bristol and its adjoining counties', Bristol, 1955, and its essay by V.A. Eyles, 'Scientific activity in the Bristol region in the past', 123-143.
2. See Kenneth Hudson, The Bath and West, Bradford-on-Avon, 1976.
3. On Broughton, see M.D. Crane, 'Arthur Broughton, a late eighteenth century botanist in Bristol and Jamaica', Archives of Natural History, 1981, 10.(2), 317-330. On Catcott, see Michael Neve and Roy Porter, 'Alexander Catcott: Glory and geology', British Journal for the History of Science, 1977, 10, 37-60. The section on Catcott contained in this chapter attempts to extend on the analysis of his work and thought contained in that earlier paper.
4. This is at least proposed as one way of describing the career of William Smith, but the general point about the relative independence of theory from practice needs to be **stressed**. The exception may be the (distant) Royal Geological Society of Cornwall, where a successful amalgamation was effected, and some (non-Bristolian) individuals, such as the mineral surveyor Robert Bakewell.
- 5.- In this discussion of the development or, to be correct, the making, of the science of geology, I am indebted to the work of Roy Porter, in his The Making of Geology: Earth Science in Britain 1660-1815, Cambridge, 1977.

6. The dimension of 'public' and 'private' dimensions in work to the history of medicine and science has not been fully explored with regard to individuals, except such figures as Sir Isaac Newton, Charles Darwin, and, to some extent Sir Charles Lyell. On the philosophy of John Hutchinson and its place in the Newtonian debates, see C.B. Wilde, 'Hutchinsonianism, natural philosophy, and religious controversy in eighteenth century Britain', History of Science, 1980, 18, (1), 1-24; G. Cantor, 'Revelation and the cyclical cosmos of John Hutchinson', in L.J. Jordanova and R.S. Porter (eds), Images of the Earth, Chalfont St. Giles, 1979, 3-22.
7. See her The Newtonians and the English Revolution, 1689-1720, Hassocks, Sussex, 1976.
8. For a discussion of these, see Steven Shapin, 'The Social Uses of Science', in G.S. Rousseau and R.S. Porter (eds), The Ferment of Knowledge, Cambridge, 1980, 93-139.
9. See J.R. Jacob and M.C. Jacob, 'The Anglican origins of modern science: the metaphysical foundations of the Whig constitution', Isis, 1980, 251-267.

Catcott's geological work was not forgotten by the scriptural geologists of the early nineteenth century: W. Buckland, In his *Reliquiae Diluvianae* (London), 1823, refers extensively to Catcott, and was relying on notes taken on Catcott's manuscripts in Bristol by the

geologist W.D. Conybeare. Conybeare himself praised **a number of aspects** of Catcott's work, **on osseous remains and** on valley strata, and the auction catalogue of Conybeare's library indicates that Catcott's **work was** bound with that of Thomas Burnet and John Ray; see Auction Catalogue of W.D. Conybeare's extensive and valuable library in the Bodleian library, dated London, 1857 (MS.Bibl.III 528.9).

10. The most interesting Bristolian statement of the importance of Newton for the natural theology tradition is that of the Reverend W.D. Conybeare, and his opening address to the Philosophical and Literary Society, attached to the Bristol Institution, entitled 'On the origin and progress of Scientific and Literary Societies', delivered to the Society in January 1824. See Appendix I.
11. Cantor, op.cit., (6).
12. See Neve and Porter, op.cit., (3), 42-43.
13. See Wilde, 'Hutchinsonianism', op.cit., (6).
14. See S.G. Perceval, 'Journal of an Excursion to Eastbury and Bristol, etc., in May and June 1767 by Sir Jos. Banks, Bart', Proceedings of the Bristol Naturalists Society, new. ser-.. ix, 1898,, 24, 6-37.
15. Hugh Torrens, 'Geological communication in the Bath area in the last half of the eighteenth century', in L.J. Jordanova and Roy S. Porter (eds),, Images of the Earth, Chalfont St. Giles, 1979, 215-247.

16. See V.J. Kite, Libraries in Bath, 1618-1964 (thesis for fellowship of the Library Association, 1966).
17. For a typically useful summary of the state of this literature, see Steven Shapin, 'History of Science and its Sociological reconstructions ', History of Science, 1982, 201 157-211.
18. The author is aware that the word 'scientist' is a coinage of the early 1830s but hopes that its shorthand use here will make for easier understanding.
19. Simon Schaffer, 'Natural philosophy ', in G.S. Rousseau and R.S. Porter (eds)., The Ferment of Knowledge, Cambridge, 1981, 55-91.

20.	Schaffer, <u>op.cit.</u> ,	(19),	pps.	78-79.
21.	The best	example of	this,	as discussed in a later

chapter, is J.C. Prichard's absolute commitment to a monogenist ethnology, that was itself to experience contradictory results by the 1840s.

22. See the essays, especially that of Roy Porter, in B. Barnes and S. Shapin (eds)., in Natural Order: Historical Studies of Scientific Culture, (Beverly Hills, Calif. and London, 1979). See also the essay review by M. Neve, 'The Naturalisation of Science', Social Studies of Science, August 1980, 10E (3), 375-390.
23. An important guide to the literature on the culture of medicine, both in Britain and on the Continent, at

- this time is that of W.F. Bynum, in 'Health? **Disease** and Medical Care%, which constitutes Chapter 5 in G.S. **Rousseau** and R.S. Porter (eds)., Ferment, op.cit., (8), 211-253.
24. On itinerant scientific lecturers, see F.W. Gibbs, 'Itinerant lecturers in natural philosophy', Ambix, 1960, 6, 111-117.
 25. C.F. Mullett, 'Public baths and health in England, 16th - 18th **Century**', Supplements to the Bulletin of the history of medicine, 5, Baltimore, 1946, 1-85; see also G.S. Rousseau, Matt Bramble and the sulphur controversy in the eighteenth century', Journal of the History of Ideas, 1967, 28, 577-589.
 26. See M. Neve, 'The medical profession in eighteenth century Bath', Medical History, forthcoming.
 27. For an overview on the issue of marginality, among other things, **see I.** Inkster, 'Introduction: **aspects - of the history of science and science** culture in Britain, 1780-1850 and beyond', in Inkster and Morrell (eds)., Metropolis and Province, .ondon, 1983; 11-54.
 28. **On Beddoes**, **see J.E.** Stock, Memoirs of the Life of Thomas Beddoes, M.D. London, 1811; F.F. Cartwright, The English Pioneers of Anaesthesia, Bristol, 1952; R.E. Schofield, The lunar Society of Birmingham, oxford, 1963, 373-377; A.C. Todd, Beyond the Blaze: a biography of Davies Gilbert, Truro, 1967; T.H. Levere, Poetry realized in nature, Cambridge, 1981; T.H. Levere,

Dr. Thomas Beddoes and the establishment of his Pneumatic Institution', Notes and Records of the Royal Society of London, 1977, 32, 41-49; T.H. Levere, 'Dr. Thomas Beddoes at Oxford: radical politics in 1788-1793 and the fate of the regius chair in chemistry', Ambix, 1981, 28, (2), 61-69; M. Neve, 'Beddoes', in Liber Amicorum, Vol. I, Milan: Ricci, 1984, 83-84; Dorothy A. Stansfield, Thomas Beddoes, M.D. 1760-1808, Chemist, Physician, Democrat, Dordrecht, Holland, 1984; T.H. Levere, 'Dr. Thomas Beddoes (1750-1808): /sic!/ Science and Medicine in Politics and Society', The British Journal for the History of Science, 1984, 17, 187-204.

29. For a discussion of the work of John Brown, see Beddoes' own translation of Brown's Elementa Medicinae, London, 1795, and the following secondary works; B. Hirschel, Geschichte d.Brown 'schen Systems v.d. Erregungstheorie, Leipzig, 1850; G. Risse, 'Scottish medicine on the continent: John Brown's medical system in Germany 1796-1806', Proceedings of the XXIII Congress of the History of Medicine, London, September, 1972; and G. Risse, 'The Quest for Certainty in Medicine: John Brown's system of medicine in France', Bulletin of the History of Medicine, 1971, 65, (I), 1-12. Risse is shortly to publish an account of Brunonianism which includes material on Britain.
30. See his edition of Mayow's Chemical Experiments and Opinions Extracted from a work published in the last

century? Oxford, 1790,

31. The suggestion about exaggeration springs from reading the account by Robert G. Frank, Jr., Harvey and the Oxford Physiologists, Berkeley: California, 1980.
32. A useful exploration of the terminology of chemistry at this time is given by J.R.R. Christie and J.V. Golinski in 'The spreading of the word: new directions in the historiography of chemistry 1600-1800', History of Science, 1982, 20, 235-266.
33. See the exchange of thoughts in the letters kept in the Davies Gilbert Archive, throughout 1793, DD DG 41 where **Beddoes came to express** support for Dumourier and Roland. The Jacobins **are represented** as agents of destruction of the Revolution's original allies.
34. See T.H. Levere, *op.cit.*, (28). **Beddoes was not** approved of by **such as Dundas** and the Duke of Portland, **and was famously parodied in the pages of the Anti-Jacobin Review**. It is of interest that the Anti-Jacobin Review in February 1800 reviewed a life of the Hutchinsonian divine George Horne in favourable terms.
35. See A.C. Todd, Beyond the Blaze, *op.cit.*, (28), Chapters 2 and 3. The financial support for the Pneumatic Institute came from established sources, and Beddoes also married into the Edgeworth family in April 1794.

36.	See B.C, Nangle, <u>The Monthly Review</u> , second pertes, 1790-18151 <u>indexes of Contributors and Articles</u> , Oxford, 1955.	
37.	See the letter to Davies Giddy, DD DG 42, dated 1 June 1798, in the Cornwall County Record Office.	
38.	See CRO DD DG 42, letter from Beddoes to Giddy, 12 February 1795.	
39.	Beddoes had also said that Sir Walter James's house in Clifton was 'too expensive' for any medical institution; DD DG 42 July 31 1796.	
40.	See CRO DD DG 41; Beddoes to Giddy, 29 Oct. 1793.	
41.	E.H. Ackerknecht, 'Hygiene in France, 1815-1845',	

Bulletin of History of Medicine, 1948, 22, 117-155;

G. Rosen, From medical police to social medicine;

essays on the history of health care, New York, 1974;

L.J. Jordanova, 'Earth science and Medicine' in L.J.

Jordanova and R.S. Porter (eds)., Images of the Earth.

(Chalfont St. Giles; 1979), 119-146; William

Coleman, Death is a Social disease, Madison: Wisconsin,

1982. See in general the work of Johann Peter Frank,

whom Beddoes explicitly admired, and who he received

as a visitor in Bristol. A useful collection is E. Lesky,

A System of Complete Medical Police: Selections from

Johann Peter Frank, Baltimore, Johns Hopkins University

Press, 1976.

42. Thomas Beddoes, A letter to the Rt. Hon. Joseph Banks, F.R.S. London, 1808.

- 43; aeddoes said that the works of Hannah More were not useful because they were 'calculated to fill the minds of the uneducated with superstition', CRO DD DG 42, March 19, 1795, to Davies Giddy.
44. CRO DD DG 89/I; letter from Anna Beddoes to Davies Giddy, August 1st 1803. Table reproduced from Rules of the Medical Institution for the Benefit of the Sick and Drooping Poor, 1803.
45. See M. Neve, 'The young Humphry Davy' in Sophie Forgan, (ed)., Science and the Sons of genius; studies on Humphry Davy, London, 1980, 1-33, and T.H. Levere, 'Dr. Thomas Beddoes and the establishment of his pneumatic institution', Notes and records of the Royal Society, 1977, 32, (1), 41-49.
46. See his 'Notice of some observations made at the Medical Pneumatic Institution', Bristol, 1799.
47. On Davy in London, see M. Berman, Social Change and Scientific Organization: The Royal Institution, 1799-1844, London and Ithaca, 1978. On Coleridge see Levere, op.cit., (28); C.A. Weber, Bristols Bedeutung fur die englische Romantik, Halle, 1935.
48. T. Beddoes, 'New Reports concerning nitrous acid', 1799.
49. T. Beddoes, Rules of the Medical Institution for the Benefit of the Sick and Drooping Poor, o .cit., C44k.
50. I owe these points, and the information regarding Beddoes' fees, to Mrs. Dorothy Stansfield.

51. On John King, **see the** manuscript collection in the Bristol Record Office, ref, no 32688/31. I am also indebted to Muriel G. Maby for permission to quote from her MS biography of King, 'The Life and Letters of John King, Surgeon, Esq.', housed in Bristol Central Library, ref. no. B 28753.
52. This information is culled from the manuscript of Muriel Maby, with permission from the author.
53. Rules, op.cit., (44) passim.
54. This is the implication of the work of F.F. Cartwright, op-cit., (28), passim.
55. The standard literature here includes E.H. Ackerknecht, Medicine at the Paris Hospital 1794-1848, Baltimore, 1967; David M. Vess, Medical Revolution in France 1789-1796, Gainesville: Florida, 1975; Pierre Huard, Sciences, medecine, pharmacine de la Revolution a l'Empire (1789-1819), Paris, 1970; M. Foucault, Naissance de la Clinique, Paris, 1963. See also Russell C. Maulitz, 'Channel Crossing: the lure of French pathology for English medical students, 1816-1836', Bulletin of the History of Medicine, 1981, 55, 475-496.
56. See M.P, Crosland, 'The development of chemistry in the eighteenth century', Studies on Voltaire and the Eighteenth Century, 1963, 24, 369--441 and his essay on chemistry in Rousseau and Porter (edsi ,, Ferment; op.cit..18), 389-416. See also A.L. Donovan,

Philosophical Chemistry in the Scottish Enlightenment:
The Doctrines and Discoveries of William Cullen and
Joseph Black, Edinburgh, 1975.

57. See Beddoes' paper, 'Observations on the affinity between basaltes and granite ', Phil.Trans, 1791, 81, 48-70.
58. W.F. Bynum and V. Nutton (eds)., Theories of Fever from Antiquity to the Enlightenment, Medical History, Supplement No. I, London, 1981.
59. Crosland, in Ferment, (eds)., Rousseau and Porter, op.cit., (8), 415-416.
60. A cursory - even journalistic - attempt to sketch this history is made in M. Neve, 'Spaced: a review of the life of Thomas de Quincey ', London Review of Books: anthology 2, edited by M. Mason, London, 1982, 178-188. This article addresses itself only to what might be called the first generation of Romantic writing, and does not discuss the hostility to Romantic Toryism that comes through in, for example, the work of Shelley and Byron. Nor does it attempt to explain how Robert Southey, the author of the suppressed republican poem 'Wat Tyler' of 1794, might end up as a conventional Tory.

Chapter 3

The example of Thomas Beddoes , however unusual, cannot simply be left in a West Country provincial context without being compared with other individuals in other settings. Bath was Bristol's neighbouring city, even though the amount of contact between the two places seems surprisingly small, in the years 1750-1800. This chapter examines features of Bath history at this time and particularly the place of 'the hospital', not with regard to the history of medical advance, but as part of the establishment of cultural sites as evidence of philanthropy and display.¹ Attention can then be paid to the Bristol Infirmary, to its organisational and administrative record, to the history of its teaching and government, and the relations with other cultural activities within Bristol.² Of the two cities, the role of the Bath medical profession, and the concerted attempt to police the activities of medical men in and around the site of the Bath waters, is the more historically illuminating.³

The central feature of the eighteenth-century medical landscape was the Bath General Hospital.⁴ The hospital was incorporated by an Act of Parliament in 1739 and opened in 1742. Prior to this, an Elizabethan act was in force that gave to the general body of the 'diseased and impotent poor' of England a legal right to free use of the baths: local JP's were empowered to licence travel to the site. Over the course of the seventeenth century, this had led to the city being inundated with beggars, and to an overflow of persons pretending to take the waters but in fact moving through the

city and living off the small-scale tourism that the baths encouraged. When this Elizabethan act expired in 1714, proposals were made for the setting up of a new institution, one that would properly organize and control the access of the poor to the Bath waters, and to be financed by a circle of benefactors. The fund raising was orchestrated by Beau Nash, and it can be argued that this particular piece of engineering on Nash's part was perhaps his major step towards his general plan for a cleaner, well-mannered city that could become a centre of polite culture. In the course of his collecting from such philanthropists as Ralph Allen, the Countess of Huntingdon, the banker Henry Hoare and others, Nash raised a sum of between £2500 and £4000. Subscriptions began from 1723, and one of the proposals made to interested gentry was that any future institution would 'discriminate real objects of charity from vagrants and other imposters.' The new hospital would therefore be an answer to the chaos and promiscuity that had prevailed under the old system of open access: it was in the sense suggested by the French historian Michel Foucault, a new site wherein the treatment of those requiring mineral water hydropathy, and not of the gentry, tourist class, could be observed.⁵

More concretely, the rules of the new hospital had one clear stipulation, designed to promote organisation; it was laid down in the rules that the hospital was not to be available to the poor of the city of Bath itself. They were not to be permitted into the hospital as patients, because 'they may have the advantage of the salutary springs at a

small expense and be accommodated at their own houses'.⁶

Thus the hospital was designed exclusively to receive the patients sent to the city on the advice of physicians from other parts of the country. To gain admission, a recommended patient had to have a certificate from his local physician, proof of identity (usually this meant testimony from two churchwardens) and £3 - £5 in danger money, which would be used to guarantee the journey home or for burying the patient, who was to be made aware of the dangers of loitering once discharged from the hospital. Anyone found passing himself off as a 'patient' when he was in fact a 'beggar' was liable, by a special clause in the 1739 Act, to a period of 12 months hard labour.⁷ As for the government and administration of the General Hospital, there were originally to be three physicians, but this number could be increased in relation to the number of patients on the books. It was increased, for example in 1744, to six, a decision that was made by the board of Governors. Obviously, some of the physicians might be on the board of governors. One could become a Governor through payment of £40. Furthermore, the activities of the Hospital were partly the responsibility of the corporation of Bath, and there were physicians who were also members of the corporation. Part of the source of tension within the medical corps ensued from this tripartite governing body of physicians, governors and the corporation.⁸

The springs were the property of the borough - the Pump Room was also administered by the Corporation, and through the Act

of 1739, the hospital too was part of the Interest of the corporation of Bath. Not least of the Implications of this institutional arrangement was the tension that became endemic between physicians practising in the hospital and their having to deal with patients forwarded to them by those of the 'lower class of the faculty of physic'. The figures quoted for the number of hospital patients and their rates of discharge always included a section on patients who were 'improper' - probably in both senses, i.e. badly behaved but also improperly recommended for treatment at the Bath General Hospital. The number of patients at the hospital between about 1745 and 1790 varied between 70 and 110 at any one time, and many of them might require long treatment often up to 10 or 12 months.⁹ This complex relation between the reception of patients, the length of time spent in the hospital and the general question of 'curing', could be made to look unsatisfactory to anyone trying to call into question the medical worth of the hospital and its forms of treatment. Bath's best known physician, the celebrated William Oliver, Jr. (1695-1764) went out of his way, in his modest work of 1751, a Practical Essay on the use and abuse of warm bathing in gouty cases, to state that doctors who lived at a distance from Bath had no correct understanding of the effects of waters on patients.

This then was the General Hospital, architected in the Ionian style of John Wood, with many famous names - including the Earl of Chesterfield, William Pitt and the Marquess of

Rockingham - among its list of presidents, It was financed by annual subscriptions and church collections, and allowed for the supervision of non-Bath poor requiring mineral water treatment. The setting up of the hospital was an important part of Bath being made safe for the arrival of that polite culture for which the city is most famous.¹⁰ The geographical and indeed the occupational, origins of these recommended patients remains unclear. It is possible that their being recommended at all meant that they were not of the poorest class. But once they had arrived in the city they remained within the walls of the hospital until their acquittal. They did of course have to make the journey to the baths as the hospital did not yet have its own: these were installed in 1795 under a special Act of Parliament.

A study of the one extant patient's admission register for the hospital from the eighteenth century, which covers the years 1742 to 1752, reveals the following information.¹¹ The majority of the patients admitted came from the West of England, especially Gloucestershire, Somerset and Wiltshire. Nonetheless, patients from London, Middlesex, Essex, and Cumberland were regularly admitted. There were, every so often, more unusual arrivals: from Scotland as with the 'paralytick' Archibald Logan, in the summer of 1742, who left after 89 days; or Chillibee Abra of Constantinople, who was admitted in February 1742, and 'cured' after 91 days. The admissions register gives no occupational

description of the patients, or their **age**, and employs throughout a loose terminology of their various condition, of which 'paralytick' or 'rheumatick', including **lameness** of the leg, are the most common, closely followed by 'hemiplegia' or 'sciatica'. Thus a typical patient at the hospital in the period 1742-1752 would be number 10, Joan Eyles, from Bradford in Somerset, suffering from hemiplegia. She stayed for 147 days. A more unusual one would be a patient like George Cotton, from (as the records put it) St. George the Martyr, Middlesex, who had lost the use of his limbs and left after 98 days.

The admission register for these years contains some **evidence for the outcome of the visit of these patients to the hospital in Bath. Length of stay could vary, as has been suggested, and so could the number of patients in the hospital at any one time. A reasonable averaging of the available data suggests that between 80 and 100 patients were housed, and that the rate of what was deemed 'cured' was about the same as that described as 'incurable'. If another category, much used, that of 'better' or 'much better' is added to the picture, then certainly more patients left the hospital in an improved state than left with no substantial changes in their condition, in the 1742-1752 period.**

From the beginning, the hospital had strict rules regarding 'unsuitable' cases. Patients with coughs, chest

pain, spitting of the blood, **Abscess or ulcers were** improper; in the early **1800s**, as the **Bath Guides** indicate in their **summaries** of the year's activities, **fever had been added to** this list.¹²

Other hospitals in the city were St. Johns Hospital, founded in the twelfth century for older people, about 6 in number; Bellott's hospital, which also housed the infirm; and three late eighteenth century developments; the Pauper charity founded in 1747 , the Casualty Hospital founded in 1788 for the injured poor, and a childbed charity established in 1792 to relieve poor married women at child-bearing time. In that same year, 1792, the pauper charity was reorganised into the Bath City Dispensary and Asylum - a development that reflects the general history of dispensaries in non-industrial towns - and this institution was specifically designed for the sick poor of Bath. The basis for admission here was 1) no admission for those on parish pay; 2) no admission without a printed recommendatory ticket from a subscriber; 3) separate treatment for servants of subscribers. It was very active at this interesting date - post 1789 - and all these late eighteenth century developments cluster suggestively around the years when the political stability that European society had enjoyed began to break up.¹³

If these then were the institutions of care, what of the baths themselves? There were four public baths, the

King's, the Queen's, the Hot Bath and the Cross Bath. The latter was the most socially exclusive, There was one private bath, the Abbey Bath to be visited at a cost of 5/- . The Strangers Assistant and Guide to Bath¹⁴ of 1773 says that waters should be drunk between 6 am and 2 pm and from 4 pm to 8 pm (in Summer) and that bathing **was best done between 6 and 9 am at a cost of 3 pence**, with 1/- payable to the guide. The recommended length for hydropathic cure could vary between 2 and 6 months. Bathing, other than recreational, would be combined as a medical treatment with the use of various medicines: William Oliver would use mercury for skin complaints, Peruvian bark for rheumatic **disease**, combined with bleeding and purging. ¹⁵ As his collaborator Dr. Rice Charleton (1710-1789) **made** clear, the efficacy of the cure in many **cases** came simply from refusing the patients the drinking of cider, which had given them lead poisoning. But waters would be combined with medicines in medical treatments.

There **were** lucrative practices to be had in Bath, and there **were many medical men** anxious to gain them. The Universal Magazine for 1747 lists 12 physicians, **7 surgeons** and 31 apothecaries; Falconer's 1773 Stranger's Assistant lists 17 physicians, 10 **surgeons** and 27 apothecaries, and the town's directory for 1792 lists 15 physicians, 15 **surgeons** and 25 apothecaries. Among these lists occur the **famous names** of Bath's medical history: William Oliver, Jr.

(1695-17641 , William Moysey, the redoubtable George Cheyne (1671-1743), who wrote on gout and was famous for his writings on diet and regimen, and on psychiatry; Henry Harington, who settled in Bath in 1757 and founded the Bath Harmonic Society; 16 Rice Charleton and William Falconer (1744-1824). The most famous example would be Caleb Hillier Parry (1755-1822), who had worked on rabies, tetanus, angina pectoris and the breeding of merino sheep at his home, Sommerhill **House**,¹⁷ George Cheyne, William Oliver and William Falconer were all buried in the parish of Weston, just outside the actual city of Bath.

A physician who lived in the city and who became peculiarly identified with its reputation and status - **someone** like William Oliver, Rice Charleton or William Falconer - would naturally be sensitive to the arrival of iconoclastic **outsiders**, anxious to enter the charmed circle of medical **men with access** to the patient market. Likewise within the profession, distinctions between physicians, **surgeons** and apothecaries, distinction **whose maintenance is such an** allegedly important feature of eighteenth century medical life, would take on particular significance. And many of the **arguments between** and within the practitioners of physic would be argued through something **else**: usually, the contents of the **waters**. Indeed, the century **saw** what might be called a 'balneological **war**'¹⁸ a prolonged printed argument over **the uses and abuses of Bath water**, to which

many medical men contributed. Often, the argument centred on one thing: 'the sulphur controversy'. Did the Bath waters contain sulphur? If they did not, what were the implications for the uses made of the waters? Was there a conspiracy on the part of the corporation and the physicians of the hospital to prevent true chemical enquiry into the contents of the waters? How strong was the local vested interest in maintaining a well established myth over sulphur and the Bath waters, so as to prevent trade from the city slipping away, possibly to other spas?¹⁹

In the first case where exclusion and the pursuit of vested interest were alleged to be at work, the sulphur controversy was not at issue. This was the controversy over the career of one Archibald Cleland Ldates unknown⁷ .²⁰ Cleland had two periods of conflict with the corporation and with the governors of the General Hospital. He was an army surgeon²¹ who first visited Bath in the latter half of 1732, and having observed the manner of bathing and finding it unsatisfactory, proposed an improvement scheme. Cleland devised various methods for the extension of steam bathing, as well as ordinary bathing, and suggested that this be conducted under cover, in what he called his 'bagniol'. To further his idea, he sought the patronage of the Prince of Wales, who sent the itinerant lecturer and experimenter Dr. J.T. Desaguliers (1683-1744) to approve it, On November 14 1739, Cleland received a letter from Beau Nash expressing

his interest, but Nash made his enthusiasms dependent on the reactions of the corporation. Slowly, this initial enthusiasm died, and Cleland became convinced that the corporation were being pressed 'by members of his own profession' to drop the project, He claimed that this had been the reaction once the news had been received that he intended to settle in Bath. Cleland also appears to have been told by the physician George Cheyne that there was a plan to get Cleland back into the army. Said Cleland²²

I have been pointed at, both in Public, and Private, as a person not fit to be relied on, as not qualified in my profession, that I came here purely to rob the Corporation and the Town of their natural Rights.

Cleland continued to maintain that the baths in the City were badly organised, often unhealthy, and that he was being discriminated against both for pointing this out and, for having been abroad, for being a mere army surgeon, and for having only a five year rather than a seven year apprenticeship. Nonetheless, he was elected to the surgery staff on the hospital, though he alleged that this was 'entirely owing to my Lord Chesterfield's being present at the next meeting of the Governors of the hospital'. Cleland found an ally in the writer Tobias Smollett,²³ who was keen to promote the use of vapours and steam bathing, as he made clear in his Essay on the External

Use of Water of 1752. Snlollelt felt that Cleland had been badly treated by the corporation, which did not initiate new designs of the kind he was sympathetic to, allowing instead the bathers to wallow in the waters, **as so** poisonously depicted in Humphry Clinker. He also said in the Essay:

I am now informed by a particular friend who lately came from that place that since LCleland's/ last scheme was presented, the physicians have come to a resolution to exclude all surgeons from their consultations on the subject ...

This must be an arrow directly levelled at him.

Cleland did however act as surgeon in the General Hospital, until 1741 when he was accused of gross indecency while at work in the hospital, in relation to three female patients. In a bitter controversy, which produced charge and countercharge, and during which time Cleland accused William Oliver of not knowing the anatomical distinction between the uterus of a virgin and that of a woman who had had both a miscarriage and venereal disease, it was decided to have a hospital investigation. Cleland was subsequently dismissed by the governors, with William Oliver, Ralph Allen and the philosopher David Hartley among those who voted against him, 24

The case of Archibald Cleland Is specific and particular. It was clearly an unpleasant affair and had brought in, at

least in its first stage, the figure of Tobias Smollett. But one should notice how unreceptive the corporation appeared to have been towards the promotion of vapour baths, as against immersion. The next focus of our attention in the struggle between the hospital and medical outsiders takes us into a more fiery, metaphorical realm. This is largely due to our next protagonist Charles Lucas M.D. (1717-1771) having been an Irishman. Lucas had served an apprenticeship as an apothecary in Dublin, before becoming by turns a drug peddler, a local politician of considerable reputation and violence, and an M.D. from Leyden, where he graduated in 1752. He spent the year 1752-53 touring the major European spa resorts, and arrived in Bath in 1753. In 1756, he wrote his three-part Essay on Waters, and practised in Bath and London, before returning to Dublin for political purposes in 1761. **He was**, like George Cheyne, a victim of gout, and his Essay on Waters was acknowledged to display considerable learning.

This, however, was a later judgment. For Lucas was deeply embroiled, and a great furtherer of, what has been termed the 'sulphur controversy.'²⁵ Put very briefly, he claimed in the Essay that the Bath waters did not contain sulphur, a substance with a long historical claim as an internal and external cleansing agent, Lucas claimed that

unlike most physicians, he had an understanding of chemistry in general, and of the chemistry of Hoffmann and Boerhaave in particular. He was thus in a position to uncover the false account being offered of the nature of the Bath waters. This defence of the chemist/apothecary was of great importance for Lucas. He said of his reputation in Baths²⁶

In another point, which is looked **upon as a** severe reflection, they are pretty unanimous; that is, in pronouncing **my name** with a 'The Apothecary' - a terrible stigma! I proudly own the charge. **I was**, and hope I still am an apothecary ... since it is more plain, that he who is not an Apothecary **and a** Chirurgeon, cannot **deserve** the name of physician.

As Lucas had already made the case for apothecaries and their chemical training in his Pharmacomastix, or the office, use and Abuse of Apothecaries examined in 1741, it is clear that he based his claim to superior knowledge on his understanding of chemistry. The Bath waters did not contain sulphur, but instead 'a subtil acid' of rather a weak kind, which could 'dilute the humours, blunt and correct their acrimony, resist their putrefaction and promote their expulsion', Lucas made explicit his view that a vested interest in the waters containing sulphur was being maintained when he said²⁷

For though they /"the citizen be many, their best privileges, such as that of electing magistrates, common council and representatives in parliament for the city, are absorbed here, as in many other corporations, by the Few - a political epidemic distemper in Britain and Ireland, beyond the reach of physic, though seconded by Bath water.

The Essay continually **makes** these connections, between politics and chemical analysis, **so much so** that the book appeared to be about the politics of chemical analysis.

Lucas also went out of his way to praise the work of other local members of this abused branch of physic, notably the apothecary Thomas Haviland, who was to play an important role in the history of geology in the Bath **area**.²⁸ Lucas claimed that the physicians of the Bath hospital never delivered **accurate** reports on the case histories of their patients, and that the present ownership of the Baths by the -corporation was a monopoly that had robbed the public of the kind **of access** that had been the Elizabethan heritage. Unsurprisingly **Lucas has been** called 'the Irish Wilkes'.

A number of aspects of the Lucas affair are **of interest**. The first is the uses that are made of an already well established controversy over the presence or non-presence of sulphur in the waters. Lucas actually named the time and the text that gave birth to the incorrect account; it is Thomas Guidott's Discourse of Bathe, and the Hot Waters There, of 1676-1677. Guidott had in fact set out, both to recommend

the waters to patients and to refute the suggestion that sulphur **was not present** in the **waters**. **Be had also made use** of a local apothecary, Henry Moor, In what might be called the 'alternative tradition', **seen as correct** by Charles Lucas, the founding father was the chemist and physiologist, John Mayow (1641-1679). Mayow had of course been a controversial figure in his own lifetime, with the eighteenth century seeing him considerably doubted by men such as Archibald Pitcairne, who was of the tatommechanical tradition. Lucas claimed **Mayow as his predecessor** in the long history of those who had been mocked for refuting the case for sulphur ?9 Often the words 'sulphur' and 'bitumen' were used interchangeably, which made for confusion. The different use of the words salt, acid, alkali, and spirit was equally inexact. The state of the science of chemistry was itself low, as is evident in the Bath example showing as it does how different opinions on the nature of empirical data viere to a considerable extent, the product of social interest - in this case the various interests of the physicians, the apothecaries and the 'insider' and 'outsider' interests in Bath.

As to how one might characterise the debate within a wider historical tradition, opinions differ. It has been suggested that the argument between Lucas, and a physician who did believe in the presence of sulphur such as Rice Charleton, can be seen as a debate between Galenists

(humoralists) **and Paracelsians** Chemists¹ with Lucas **as a member** of the former group.³⁰ Certainly **Lucas**, - like many other writers in this controversy, **used the** language of humoral medicine. **But he also wished to be** thought of **as a more advanced** chemist than his opponents, and therefore to place him with a group of 'Galenists' is to endanger the one obvious social distinction that distinguished him - that he had once **been an** apothecary. In the argument with Charleton it is almost as if the two **men were** trying to show that each knew **more** Boerhaave than the other. Someone like Alexander Sutherland, a Bath and Bristol doctor, in his The Nature and Qualities of Bristol Water, of 1758 continually refers to Hoffmann, Boerhaave and other authorities, and even praised the experimental research of Lucas himself.³¹ He was also agnostic on the sulphur question. **It seems** that Lucas **was much more** interested in what might be called 'controversial visibility' - and that he needed a more extravagant style of writing in order to make his mark **as an** opponent of the 'closed shop' of established Bath physicians. Hence his concentrating on sulphur, which he takes to be a coverall word concealing chemical ignorance, and his use of ideas of 'phlogiston' and 'volatile acid', to distinguish himself from the other writers in the field. It was this tendency to verbal display that was pointed out in a review of Lucas's Essay in the Critical Review of 1756 - a review probably written by

Tobias Smollett.³² It is difficult to tie in these various strands of argument into a division, once favoured by G.S. Rousseau, between Galenists and Paracelsians, or iatro-mechanists and iatrochemists.

In the case of Charles Lucas, one has the example of an ambitious medical man anxious to place himself in a tradition of argument that ran against the less well informed chemical education of Bath's established physicians. Coley has provided a succinct account of this debate: what needs stressing is that Lucas was anxious not simply to foliaathe major position on the absence of sulphur, but to establish his case on more sophisticated chemical analyses.³³

It was quite obvious to contemporaries that a fundamental distinction in Bath waters was being challenged, and that to allege the non-presence of sulphur was to slander both the theory and practice of the local, established physicians.³⁴ It was this hint at 'cover up' and ignorance that drew William Oliver's anger in his brief exchange of letters with Lucas on the allegation of a conspiracy-³⁵ Should the Bath waters be proved milder and less pungent than was thought, their distinctiveness against the waters of the Bristol Hotwell would be challenged. This challenge might have further implications for the economy of Bath in general.

The case for Charles Lucas was restated by William Baylies (1724-17871 who graduated M.D. from Aberdeen in 1748,

and further attacked by Lucas's fellow Irishman, John Rutty (1695-1775).³⁶ Baylfes had also been initially trained **as an** apothecary, and in his book on the Bath waters of 1757, he restated Lucas' arguments, calling the latter 'learned and judicious'. Baylfes proposed that some of the mixtures of waters and medicines that were being **used were** dangerous. He says that the apothecary Thomas Haviland could testify to the need to use the salts of the Bath waters in careful quantities, and that the salts should sometimes be taken without water.³⁷ Baylies appears to suggest something more too: that the failure to examine and utilise the separated salts of the Bath waters was deliberate policy on the part of the established medical men and the corporation. Perhaps there **was a fear** that the waters would become mobile as it were, with the salts available for packaging and transport. It is of related interest how relatively small the transport of bottled water was from Bath, as compared to other resorts.³⁸ Baylies also claimed that the hospital was deliberately keeping down the number of physicians, and still failing to produce accurate research and open argument. He accused William Oliver of nepotism, and said that many of the combinations of medicine and water that were being used were dangerous, especially to persons of frail disposition.³⁹ He alleged that at a meeting of the subscribers to the pauper charity, he had been told by a surgeon to the hospital that were the case histories of patients in the hospital to be published in the manner that

Baylies **suggested**, the water would **be exposed** and that the world **would be shown** their real insignificance. Baylies also points out his sympathy for the fate of Archibald Cleland, **and mentions** an(article published in the Critical Review of 1758, which **suggested** that **the case** of Archibald Cleland should **have been** recalled more accurately, for 'that suspension and that dismissal, **as Dr.** Baylies well knows, **were instances** of the most illegal despotism, of the most flagrant, iniquity and cruel oppression ."_40 As a result of these allegations, Baylies **was shunned** by Doctors Oliver, Moysey and Charleton, and an official reply to his complaints was printed which stressed the parlous financial state of the hospital **as a reason** for not being able to take on further physicians.⁴¹ Baylies stood by his claims and by those of Charles Lucas who he claimed was being blamed for 'expelling from the waters the ideal sulphur, the god of **some men**'s idolatry'.⁴² Baylies quit Bath, and eventually became a physician at the court of Frederick the Great. He died in Berlin, in March 1789.

The arguments that Charles Lucas had generated had in fact begun in his native Ireland, where his protagonist was the Quaker physician named John Rutty (1698-1775).⁴³ Rutty had written extensively on mineral waters, and had dealt with Lucas's claims specifically in a volume entitled The Argument of Sulphur or no sulphur in waters discussed, in 1762, five years after his magnum opus, A Methodical synopsis of Mineral Waters. Rutty concludes on the question of Bath water:

The Bath water therefore maintains its title to the powerful effects ascribed to it, not merely from the active heat, nor merely from the ingredients common to it and any mere purging chalybeate water ... but also from a sulphureous impregnation, particularly as an expeller of gouty or other morbid humours to the surface of the body.⁴⁵

This 'sulphur controversy' reflected the divisions that existed within the profession of physic in eighteenth-century Bath. The setting up of the Bath hospital entailed the admission of patients from other **areas of** the country, and led to a persistent tension between Bath physicians who practised in the hospital and outsiders who argued that the practices of the hospital **were** not sufficiently detailed in publicly available form. Circling this institution came outsider figures, with trainings as apothecaries **and a desire** to gain publicity in the lucrative tourist market. Sulphur was the terrain, the natural symbol, around which the attack and the defence were fought. ⁴⁵ There **was of course** another dimension - **as always** - the Oxbridge dimension. William Oliver and Rice Charleton were graduates of Oxford and Cambridge respectively, and the latter went out of his way to **stress to** William Baylieg that his not having gone to Oxford and Cambridge, and having come from Aberdeen, was of no consequence. ⁴⁶

In many ways the debate was terminological, with each new tract seeking a chemical language to clarify those mistakes in its predecessors.⁴⁷ But the diversions that the controversy engendered may have contributed to the defensiveness and reticence of the established physicians at Bath, whose knowledge and use of the waters as a medical cure was being maligned. To retain a medical expertise was of particular importance to them both as an interest in the welfare of Bath, but also as a separate skill and method from the routine business of tourist bathing. For the possibility had been raised that the Bath waters were of no particular medical importance. It is possible to detect, towards the end of the eighteenth century, some distinct sympathy for this opinion, and for the merits of simple water as against mineral waters.

The intra-professional rivalries of the medical personnel in Bath were reflected in the controversy over the chemical content of the waters that were the basis of the city's claim to visiting valetudinarian interests. In the case of one later writer on Bath waters, their chemical composition was deemed to have no central importance. For this was the contribution to the medical disputations made in Bath in mid-eighteenth century by the celebrated 'quack doctor' James Graham C1745-1794148

Graham studied medicine at Edinburgh under Monro secundus, Whytt, Cullen and Black. He travelled to America in the 1770s and practised as an oculist and aurist, returning

to England in 1775, during which time he was in the Bath and Bristol area. He practised in Bath in 1774, between 1777 and 1779, and between 1789 and 1790, and made various converts, including Catherine Macaulay. From what is known of his English and Continental visits, he **seems** to have had his chief market among aristocratic patients. In the course of one of these Continental visits, he is said to have met Benjamin Franklin.⁴⁹ Graham recommended a number of therapies in the course of his career: vegetarianism, bathing naked in mud for most of the day, and generous doses of his own particular balsams and pills. The most famous of these were his 'Nervous aetherial balsam' (a mixture of Peruvian bark, saffia, lavender and red **rose** buds, with what he called 'electrical nitre'), this being especially recommended to women at menstruation and for promoting fecundity; also recommended were his 'electrical aether', made out of roots and flowers, and 'imperial pills', brewed and manufactured in special metal cups. Of these, said Graham, 'I use the fire that connects and moves the whole solar system'.⁵⁰ The most famous of his various devices was 'the celestial bed' which he had built in a Temple of Health at the Adelphi, and which was designed to promote fecundity, at the large sum of £50 per night. When medical historiography loses some of its presett timidity, Graham - like Mesmer in Vienna ' will surely be seen in a new light, with the word 'charlatan' exchanged for a more archaeologically

exact one - that of sex therapist, Many of Graham' **s cures** were aimed at female complaints of particular kinds, impotence and poor health.

Graham wrote quite extensively on Bath and on Bath waters, and numbered among his supporters in the city Philip Thicknesse⁵¹ and Edmund Rack,⁵² the Quaker secretary to the Bath and West Society. Graham's critique of the medical situation was simple. He found most of the visitors to the city to be decrepit and lacking simple dietary regulation. He claimed that the combinations of medicine and uses of waters were dangerous, especially for those of florid habits or those with weak spirits.⁵³ Instead he would recommend plain cold water and fruit. Patients should not be purged or blistered, especially if taken ill during agricultural work, but given a pound of **meat**, a pound of bread and a pint of water. He claimed to have cured patients who had left Bath General Hospital in paralytic **states**. **He** made specific complaints against Bath in his Treatise on the True Nature and Uses of the Bath Waters of 1789. **He said** there that the baths were too crowded and too exclusive, and that but for the newly established pauper-scheme which itself required an introductory card, and often money, there were no real arrangements made for the poor. Bathing if indulged should be cheaper, and mud baths made available, As for the endless writings on the nature of the waters{ Graham commentgd... 'like Linnaeus' botanical distinctions, they benefit man very little'. As always, the volume contained 'approving' letters,

in this case **from citizens** of Bath. **Graham's career is** nothing if not self-contradictory, **and he appears to have ended** his days **as a bizarre** mixture of Christian **and pagan**. But intriguing **features remain**; **in his case** for the virtues of mud-bathing, for example, he cited the earth as having been of **great age** 'created not 6000, but 60 millions of years ago, or perhaps **from** all Eternity' - making a connection with geological **science** of a distinctive and radical kind. 54

Because Graham also saw the Earth **as 'an huge** animal, or living system' with backbones (i.e. mountains) arteries and veins, 'it secretes and excretes and only the foolish drink the acid, saline and sulfurous **excrements** in fossil and mineral medicines', in mistaken preference to simple waters. 55

James Graham was not without supporters in the city. Philip Thicknesse (1719-1792) described him as 'a Great Empiric' who was near death at one stage and thus 'the world nearly lost a man who carried the art of healing to great heights.' 56

Thicknesse in this volume interestingly quoted Rousseau in a general warning against the practice of physicians, although he paid respect to some surgeons and mentioned approvingly William Oliver's work on gout. One other feature of Thicknesse's writing on Bath is his fierce defence of Charles Lucas: not only does Lucas' Essay remain a source for all subsequent writers on the subject, including Lucas' opponent Rice Charleton and even Willia Falconer, but his treatment by the residential physicians when he displayed his superior

analytical skill was disgraceful;

Had any man forty years ago dared to have asserted that the Bath scum is not a sulphurous substance ... the doctors, the apothecaries, the Bath sergeants, the male and female guides would have united to hound him out of the city: and they attempted thus with Dr. Lucas, who survived only because Lord Chesterfield, the ingenious Dr. Davies and the apothecary and chemist Mr. Haviland stood by him.⁵⁷

Apart from the support of Thicknesse, who was given to the taking up of eccentric cases, James Graham's supporters, and their numbers, can only be estimated from the printed letters of admiration collected in his various volumes.

The hospital in Bath should be seen as a cultural device which allowed for the planned control of the 'medical' users of the Bath waters, and for the genteel elimination of casual, pauper usage in a city bent on the Enlightenment task of providing valetudinarian comforts. This development permitted in turn the emergence of a group of local, established physicians who were committed, for a variety of reasons, to maintain the unusual claims for Bath water and its chemical effectiveness. In the case of a physician such as William Oliver, It is also useful to regard him as actively involved in the maintenance of the culture of politeness, given the place of the hospital in the development of Bath.

Out of the competing claims about the -quality of Bath waters - claims that reflected 'native' interests as against the dubieties of visiting, sceptical outsiders - the 'balneological war' took place.

The controversy over the chemical content of the **waters bears** interesting parallels to other controversies in eighteenth century medicine. The terminological prolixity of the debate - mapped out by Coley - became overdetermined, and James Graham exposed the language of chemical argument to the reductionist claims of regimen, mud, water and sexual 'healthiness'. This reductionism is paralleled in the wider medical context by the work of John Brown (against William Cullen) and by the equilibrium model of human health propounded by Erasmus Darwin.⁵⁸ Graham was trained in Edinburgh, and his reductionism - allied as it was to a distinctive notion of sexual therapeutics - from part of some expressions of late eighteenth century medical **weariness** with taxonomic haggling.⁵⁹

Bath in the period 1770-1800 **had seen a** medical controversy develop, and a medical literature printed, that directly reflected the importance of the Bath waters themselves, within the social economy of one of Europe's most fashionable resorts. And, as Torrens has shown, a coterie of individuals including physicians like Caleb Hillier Parry, William Watson, Jr. (1744-1824), or gifted natural historians such as John Walcott , Jr. (1755-1831), or itinerant lecturers such as John Arden (1720-1791)

could come to make up the Semi-informal Bath Philosophical Society, from 1779. Torrens is anxious not to overestimate the amount of formal activity that took place among just over two dozen men, but points out that medical men comprised ten of the twenty-nine identified members, and that of these, eight were physicians. But the crucial point is that activity was sporadic because many interested individuals were themselves visitors, subject, as in so much of Bath's history, to the rhythms of the tourist economy.⁶⁰ There was already a second Bath Literary and Philosophical Society by late 1798, before the formation of the Bath Literary and Scientific Institution in early 1825.

Thus medical men were philosophically active and also present in Bath in quite large numbers: an unsurprising combination perhaps. The history of early nineteenth century Bath has been less well explored but there is evidence both for the presence of even larger numbers of medical men, and an institutional setting for philosophical activities, alongside a relative moribundity of cultural activity, compared to the apparently 'transient' world of the first Bath Philosophical Society. Therefore, even though the medical men disputed so heavily in the mid-eighteenth century the existence of an institution in the Regency era was no guarantee of fecundity,

By 1810, Bath had a population, according to V.J. Kite, of about 33,000. The suburbs of Bathwick, Walcot, Lyncombe

and Widcombe were the growing favourite Regency areas.⁶¹ But the great days of Bath as a resort were passing, and much of its elite population were going to be drawn from retired members of the armed services. It is therefore notable that the size of the local medical corps expanded considerably between 1790 and 1825, as did the number of small institutions committed to medical care. The Bath Guides indicate that in 1790 the city contained 16 physicians, 13 surgeons and 26 apothecaries and chemists. In 1806, there were 26 physicians, 14 surgeons and 27 apothecaries and chemists. In 1812, there were 26 listed physicians, 27 surgeons, 20 apothecaries and (in a new category) 15 chemists and druggists. In 1825 the city contained 24 physicians, 46 surgeons, 7 apothecaries and 20 chemists and druggists.

Among this group of medical practitioners, William Falconer and Caleb Hillier Parry were still the most celebrated, and many of the medical men listed are unknown to medical history. The figure of Dr. George Smith Gibbes (1771-1851) might be said to be typical of the well-known local men of the early part of the century: graduating from Exeter College Oxford in 1792, then M.D. from the same University in 1799, he was elected to the Bath General Hospital in 1804 and physician to Queen Charlotte in 1819, In the early part of the century, **he acted as** secretary to the Bath Public Library.⁶² Two other physicians had considerable local **fame**; Dr. Edward Barlow (1781-18481, born in Mullingar

in Ireland, an ardent phrenologist (being a member of the Medical and Chirurgical Society of London and a friend of Spurzheim), author of eight essays for the Cyclopedia of Practical Medicine, and secretary of the Bath branch of the Provincial Medical and Surgical Association; and Charles Henry Parry (1779-1860) eldest son of Caleb Parry, friend of S.T. Coleridge, an Edinburgh M.D., physician to the General Hospital from 1818 to 1822, and responsible for the organisation and dissemination of some of his father's unpublished medical writings.⁶³

In addition to the hospitals mentioned earlier, the early part of the nineteenth century saw new developments. In 1798, the Sick Man's Friend Society was instituted; in 1812 the Children's Friend Society was created; in 1815 a savings bank for persons 'in the lower stations of life'; and in 1818, a Servant's Friend Society 'for the improvement and encouragement of good servants'. Alongside these small scale contributions to the moralisation of social behaviour characteristic of the time, a Bath Penitentiary was started in 1805, to imitate the Magdalen Hospital in London. It had one surgeon on its staff, and was designed for 'deluded females who have wandered far from the paths of rectitude'. Earlier that same year, a society for the 'suppression of vagrancy' had also been initiated.⁵⁴ From 1816, the reforming Penitentiary had added to it a 'Lock Hospital', and 20 women could now be accommodated at the small site on Walcot Street. William Falconer was one of the three physicians at the Penitentiary and Lock Hospital. The Bath Guides indicate that the best known names among Bath's

doctors would be involved in at least **one or more of** the hospital activities in the city Itself. Thus Caleb Hillier Parry could be a physician to the General Hospital and also attend the puerperal, or child-bed charity, which provided poor women - 'with approved midwives of their own choice, in natural labour, and further medical **assistance** in preternatural **cases**'.⁶⁵

The Bath City Dispensary and Asylum had three physicians, two surgeons, and one apothecary on its staff from 1810. In the following year, 1811, it had seen 1711 patients of whom 189 were in-patients. Between 1814 and 1815, 1614 patients **were seen**, of whom 157 were in-patients and 1442 out-patients. **Persons** receiving parish pay continued to be inadmissable, but advertisements for the Dispensary and Asylum continued to stress, against the General Hospital, that the Bath poor, if properly recommended, were to be looked after, because they 'have not even the **means** afforded to strangers of employing the waters, so bountifully provided by Providence in their native place'.⁶⁶

Particularly after the initiatives of the early nineteenth century, the various hospitals In Bath could all be said to be part of the campaign for moral Improvement that lay behind the original **scheme for** the General Hospital. The control of vagrancy, with regulated access to the baths **was to** be abetted- by the attempted control of prostitution.

The increase in the number of medical agencies for moral control **is accompanied**, in the years 1800-1830, by two other developments. The number **of doctors, as has been seen, increased** notably as the city of Bath itself fell on harder times. And at the same time, **a new** context for scientific and philosophical activity was sought that displayed **less** of the informality of Enlightenment forms, **and more of** the explicitly institutionalised ideal that nineteenth century provincial (and metropolitan) culture would favour.

Between mid 1819 and late December, 1820, there were negotiations over the fate of the Lower Assembly Rooms site, near the centre of the city, since the buildings themselves were destroyed by fire. The owner, Earl Manvers, agreed to rent the site once 400 proprietary shares of 20 guineas each had been issued. According to V.J. Kite, it is unlikely that the full share list was ever filled: early in 1823, 130 shares had been taken up, and the Marquis of Landsdowne was named as President. A library of 1700 books was also gathered, many from the sale of William Beckford's library.⁶⁷ The Literary and Scientific Institution was formally opened in January 1825, with George Crabbe, William Lisle Bowles and Thomas Moore as guests of honour. Over the next two years, it is clear that some of the lecturers hired by the Institution were either on their way to Bristol or on their way back, from the Institution there: Spurzheim the phrenologist was one example of this.⁶⁸

Kite also hints that the Incomplete subscription to the institution (a situation paralleled in Bristol) required the lowering of rents by Earl Manvers to enable the Institution to occupy the site.

The 'scientific', as against 'literary' works donated to the library of the Institution were usually contributed by P.B. Duncan (1772-1863), keeper of the Ashmolean Museum, who had taken over this post from his elder brother, J.S. Duncan. P.B. Duncan had contacts in Bristol as well as in Bath, living a good deal in the latter city from 1801. He was a good example of the culturally active individual who was at the same time much involved in local philanthropic and socially moralistic projects, especially the savings bank.⁶⁹ As will be seen in the Bristol example, the 'culture of science' in the early nineteenth century - at least in these examples - is a conglomerate of moral initiatives, with the formal study of literature and philosophy, in a properly institutionalised setting, accompanied by a renewed call for the suppression of vice and the encouragement of habits of prudence among the socially deprived.

The Institution at Bath also benefited from having donations from the natural historian Leonard Jenyns (1800-1893), in its later years, since Jenyns was to reside at Woolley, near Bath, from 1860-1893. Given that this is relatively late in the history of the Institution, it can

seem, as Kite has pointed out, that the literary pretensions of the Society were stronger than its scientific ones. He suggests this while also shrewdly pointing out that this Institution housed a library that did not contain the very novelists who had written about Bath in the century that had just passed.⁷⁰

There is however one catalogue of the Bath Institution dated at about 1835, which suggests that an interest in the sciences must have come from somewhere, even if it was one individual, such as P.B. Duncan, ⁷¹ Among the books in the library were: H. de Blainville's Principes d'anatomie comparee, volume I, Paris, 1822; A-T Brongniart, Memoire sur les terrains de sediments superieurs du Vicentin; G.B. Brocchi, Conchiologia fossile subappennina, 2 vols. Milan, 1814; Karl Gustav Carus, Comparative Anatomy, translated by R.T. Grove, 2 vols, London, 1827; G. Cuvier, Le regne animal, 4 vols, Paris, 1817; Recherches sur les ossements fossiles des quadrupedes, Paris, 1821-1825; J.B. Lamarck, Histoire naturelle des animaux sans vertebres, 7 vols, Paris, 1815-1822; J.S. Miller, Natural history of the crinoidea, Bristol, 1821. Also included in the catalogue were works by William Buckland, W.D. Conybeare, H.T. de la Beche, A. von Humboldt, G.B. Scrope, Sir J.E. Smith and J.A. de Luc.

No major conclusions can be drawn from the fact that these books were in the library, nor does the existing material on the Literary and Scientific Institution allow

for generalisations or the extent to which medical men **were especially prominent. There were considerable numbers of them in the city at a time of sporadic economic distress,** and there can be little doubt that a physician like Dr. **Edward Barlow would have been keen that phrenology should** be lectured on at the Institution. What can be proposed **(and examples from Bristol will be discussed later)** is that **there must have been considerable interest in aspects of** continental zoology and comparative anatomy that are conventionally **assumed** to be inimical to a conservative, natural theological milieu. **The presence** of books by Carus, Blainville and Lamarck is especially notable. The possibility of incorporating a 'unity of plan' argument into a theological framework, or using Lamarck's work purely as a working text, without having to get involved in his speculative philosophy, is a historical possibility that would add to the already existing speculations in this **area.**⁷²

The establishment of a Mechanics Institute in Bath **was not easily accomplished. There was opposition from two local clergyman, the Reverend E. Player of St. James's** Church and the Reverend E.W. Grinfield, minister of the Laura Chapel. Until the support for the MI that came with the reformed Corporation in 1835, the main backers were the proprietors of the local newspapers, the Bath Journal. According to Kite, the MI had its best years **between 1838 and about 1840, with a small membership, drawn**

from clerks, printers, booksellers, carpenters, **masons, taildrs and shoemakers.** in 1845, the name of the MI was altered, as at Bristol, to the 'Athenaeum', and Kite notes the low percentage of active Chartists among the membership of about 150.⁷³

In 1835, the year of the reformed Corporation, the Act forbidding the entry of the Bath poor to the baths was rescinded. From 1832 the Bath City Dispensary and Asylum was called the Bath United Hospital, which was funded to the tune of £5000, of which £1000 came from the mayor and the Corporation, and £4000 from private subscription: **the scientific activist and museum keeper P.B. Duncan was** elected president in 1841, and Bath now had its two main hospitals open to the local population. (Access to the baths was improved from the General Hospital point of view by the direct connection via a pipeline in 1831). By 1840, the building intended for the Lock Hospital had also been converted: into a neat chapel, attached to the established church, with penitents required to attend and having room 'for more than three hundred persons'.⁷⁴ The size of the **medical profession in a now economically stagnant city** continued to expand: in the year 1840 there were 22 **physicians, 52 surgeons, 2 apothecaries and 34 chemists and** druggists listed In the Guide, And the relative lack of success that had come the way of the Bath Literary and Scientific Institution did not prevent Queen Victoria from

agreeing that it be called '**Royal**', from 1837, an honour never accorded to the slightly more successful institution in Bristol.

Although geographically close, Bristol and Bath displayed only superficial similarities, in terms of cultural organisation, in the early nineteenth century. The presence of a large number of medical men, in both centres, but especially in Bath, did not lead to their dominating cultural activity. And in both places, the times were not auspicious for the institutionalisation of scientific activity, although this went ahead at the behest of local elites. The differences between Bath and Bristol are more striking than the similarities.

Footnotes to Chapter 3

1. John Woodward, To do the Sick no Harm: a study of the British voluntary hospital system to 1875, London, 1974; Brian Abel-Smith, The Hospitals, 1800-1948, London, 1964; F.N.L. Poynter (ed.), The Evolution of Hospitals in Britain, London, 1964; F.N.L. Poynter, (ed.), The Evolution of Medical Education in Britain, London, 1966; Charles Webster, 'The Crisis of the hospitals during the industrial revolution', in E.G. Forbes (ed.), Human Implications of Scientific Advance, Edinburgh, 1978, 214-223. See M. Foucault, The Birth of the Clinic (translated by A.M. Sheridan Smith), London, 1973.
2. For particular examples of interactions between medical men and general cultural activity in individual cases other than Bristol see Ian Inkster, 'Science and Society in the metropolis: the Aiskesian Society of London, 1796-1807', Annals of Science, 1977, 34, 1-32; Walter Radcliffe, 'The Colchester Medical Society, 1774', Medical History, 1976, 20, 394-401; J.F. Fulton, 'The Warrington Academy (1757-1786) and its influence upon medicine and science', Bulletin of the History of Medicine, 1933, 11 50-80; Ian Inkster, 'Variations on a theme by Thackray; comments upon provincial science, culture, c, 1780'1850', British Society for the History of Science Newsletter, 1982, As 15-18; J.V. Pickstone, and S.V.F. Butler, 'The politics of medicine in

Manchester 1788-1792: hospital reform and public health services in the early industrial city', Medical History, 1984, 28, 227-249.

3. The most recent account of the place of the Bath waters in the medical world of eighteenth century Bath is N.G. Coley, 'Physicians and the chemical analysis of mineral waters in eighteenth century England', Medical History, 1982, 26 (2), 123-144, especially pages 133-137. The use of 'illuminating' is intended to indicate that there is a stronger relationship, in the Bath example, between a therapeutic medium - mineral water - and controversy over its efficacy, than occurs at the Bristol Hotwell or in analogous examples from Bristol.
4. The best orthodox accounts of Bath remain A. Barbeau, Life and Letters of Bath in the eighteenth century, London, 1904; Richard Warner, The history of Bath, Bath, 1801; and Oliver Goldsmith, The Life of Richard Nash of Bath, London and Bath, 1762.
5. N. and J. Parry, The rise of the medical profesion, London, 1976; J.V. Pickstone, 'Comparative studies of the development of medical services in Lancashire towns', in J.V. pickstone (ed.), Health, Disease and Medicine in Lancashire 1750-1950, Department of History of Science and Technology, UMIST, occasional publications, number 2, 7-32; P.V. Turner, The Royal Mineral Water Hospital, Bath: a brief history 1742-1921, Bath,

- 1921; R.W.F. Falconer, M.D., The Bath General or Hot Water Hospital, Bath, 1857.
6. See the Act for establishing and well governing an Hospital or Infirmary in the City of Bath, 1739. For an account of the place of the corporation in the city, see Sylvia MacIntyre, Towns as health and pleasure resorts: the development of Bath, Scarborough and Weymouth, 1700-1815 (Oxford D.Phil thesis, 1973).
 7. 1739 Act (passim).
 8. On Bath in general, **see R.S.** Neale, Bath 1680-1850, London, 1981; P.R. James, The Baths of Bath in the sixteenth and seventeenth centuries, Bristol, 1938; and B.B. Schnorrenberg, 'Medical Men of Bath', in Studies in Eighteenth Century Culture, 1984, 13, 189-203.
 9. R. Warner, (2), page 58. Warner gives figures for the number of patients cured and dismissed since 1742 as 4490, with 7083 'much better' and 778 'incurable'. Another interesting category employed in Warner's description is that of 'improper', in which case there were 2126 in number. 348 patients had died. The restrictive aspect of the 1739 Act was not rescinded until 1835.
 - 10, On the place of Bath as a model for Enlightenment Civility, see Benjamin Boyce, The Benevolent Man: a life of Ralph Allen, Cambridge, Mass., 1967.

11. This admission register is kept at the Royal National Hospital for Rheumatic **Diseases**, Upper Borough Walls, Bath. The average length of stay for the patients, which could be well over a year, is not unusual for eighteenth century hospitals, and is not a particular reflection of the nature of the hospitals' activities. It is also not quite accurate to say that a patient would never leave the hospital during this time: wearing suitable badges, the patients who were able to would fetch water from the King's bath.

See also Reverend Edward Bayly, A sermon preached in Bath Abbey, on April 23 1749, a copy of which is kept in Bath Central Library.

12. See the Bath Guide for the year 1801. Information on the hospitals and charities in the city in the Guides tends to deteriorate in the period 1800-1830.
13. The union of the pauper charity and the dispensary **in 1826 came** to form the Royal United Hospital. R. Warner op.cit. (2) gives the following figures for the Bath City Dispensary for the period 1793-1799 on page 303:

Outpatients Inpatients Cured Relieved Still on Books

1793	638	140	391	80	68
1794	734	111	377	78	78
1795	931	116	411	48	103
1796	965	110	475	56	135
1797	976	111	468	87	170
1798	1350	113	706	116	263
1799	1536	113	794	135	351

Warner is not illuminating on the breakdown of the various complaints that the Dispensary, of 1792 foundation, dealt with, or about the age, sex or occupation of the patients.

For useful suggestions on the place of the dispensary as part of the political history of this period, see J.V. Pickstone, 'What were dispensaries for?' Bulletin 20, Society for the Social History of Medicine, June 1977, 25-28.

The Bath City Dispensary and Asylum appears to have changed its function between 1747 and the mid-1790s, with home visiting declining, and with the charity receiving in and out patients instead. There was a staff of 3 physicians, a surgeon and an __apothecary, with a committee of twenty subscribers, who had two rooms set aside in the asylum for their servants.

14. The copy of this work in the Bath Central Library has on the titlepage 'This guide is said to be written by the /late Doctor William Falconer'.
15. See Cases of persons admitted to the Infirmary at Bath under Dr. Oliver, Bath, 1760, probably the third section of Rice Charleton's three tracts on Bath water, with additional cases and notes, eventually reprinted in 1774.
16. See J. Murch, Bath physicians of former times, Bath, 1882, and also his Biographical Sketches of Bath celebrities, London and Bath, 1893.
17. On Caleb Hillier Parry, much of whose library is held in the Medical Library at the University of Bristol, see P. Kligfield, 'The early pathophysiologic understanding of angina pectoris (Edward Jenner, Caleb Hillier Parry, Allan Burns)', American Journal of Cardiology, 1982, 50, 1433-1435. Caleb Hillier Parry, An inquiry into the symptoms **and causes** of the syncope anginosa, commonly called angina pectoris; Bath, 1799; idem., Elements of Pathology and therapeutics, second edition, London, 1825, (2 vols); W. MacMichael, Lives of British physicians, with a life of C.H.P. by Charles henry Parry, London, 1830; and the entry by M.R. Neve, on Parry, in fiber Amicprum Rene, tcfio b .ografico di storia della medicina e delle scienze naturalis 1984-85 by Franco Maria Ricci editore of Milan.

18. Subsequent studies of Bath's eighteenth century medical world have made use of this expressions I myself first used it, when giving a talk at Bath in November 1977,- see D.M. Stoddart, Bath - some encounters with science, Bath, 1978, 81-91.
19. A question raised by S. Macintyre, op.cit. footnote 6.
20. For the works of Archibald Cleland, see his Appeal to the publick: or a plan narrative of facts, relating to the proceedings of a party of the Governors of the New General Hospital at Bath against A. Cleland, London, 1743, A full vindication of Mr. Cleland's appeal to the publick wherein the .. falsehoods contain'd in a late pamphlet call'd a short vindication of the proceedings of the Governors of the General Hospital at Bath will be clearly detected and exposed, Bath, 1744; see also, as part of this controversy Lanon/, A letter to A. Cleland occasion'd by his full vindication of his appeal to the public against the proceedings of the Bath Hospital, London, 1744; T. Smollett, An Essay on the External Use of Water, London, 1752; William Oliver, Essay on the use and abuse of Warm Bathing, Bath, 1764.
21. He was in fact surgeon to General Wade's regiment of horse. Cleland had also attended the surgeon James Robinson in Edinburgh and gone to South America with the South Sea Company in 1723,

22. From a manuscript letter in the Cambridge University Library collection of Cleland-based materials on the balneological controversy, which contains, inter alia, the materials listed in footnote 20.
23. T. Smollett, Essay, passim (footnote 20).
24. These details are to be found An appeal to the publick, 1743 (footnote 20).
25. G.S. Rousseau, 'Matt Bramble and the sulphur controversy in the XVIIIth century', Journal of the History of Ideas, 1947, 27, 577-589.
26. Charles Lucas, An Essay on Waters, London, 1756, part I, page xviii.
27. Lucas, Essay, part 3, page 244 (footnote 26).
28. Lucas, Essay, part 3, page 238 (footnote 26); see also H.S. Torrens, 'Geological communication in the Bath area in the last half of the eighteenth century', in L.J. Jordanova and R.S. Porter (eds), Images of the Earth, op.cit., 215-247.
29. This genealogy, but not its implications, is nicely laid out in J.R. Spender, M.D. The Bath Thermal Waters, London and Bath, 1877, where the case for sulphur is made by Guidott, Jorden, Wynter and Rice Charleton, and contradicted by John Mayow, Charles Lucas, William Baylies, and fellow travellers such as Philip Thicknesse. For a most helpful general review of writings on springs and medicine, see C.F. Mullett, Public Baths and Health in England, 16th - 18th century, supplement to the Bulletin of the History of

Medicine, number 5, 1946.

30. A division **argued for** - in my view inconvincingly
- **by G.S. Rousseau**, 'Matt Bramble, op.cit (25). **See also** his useful clarification of many of the terminological difficulties involved in this subject **in G.S. Rousseau**, 'Smollett's Acid Vagum', **Isis**, 1967, 58, 244-245.
31. A. Sutherland, The Nature and Qualities of Bristol Water, Bristol, 1798.
32. Critical Review, vol.1, 1756, pps 321-345; **see also** Critical Review, vol.4, 1758, page 160.
33. See Letters of Dr. Lucas and Dr. Oliver, occasioned by a physical confederacy discovered in Bath, London, 1757.
34. **See** especially William Oliver's letter, op.cit., (33), where he attempts to deem **Lucas as an** irregular practitioner who had not remained in a steady career in one branch of the profession.
35. Coley gives a useful table of the various competing chemical theories: see N.G. Coley (footnote 3) passim.
36. For Baylies, **see** E.A.B. Barnard, An Eighteenth Century Worcestershire doctor; W. Bavlies of Evesham 1724-1789, Worcester, 1946; and W. Bayles, Practical reflections on the uses and abuses of Bath waters, London, 1757; idem, A narrative of facts, demonstrating the actual existence and true cause of that physical confederacy in Bath, London, 1757; idem,

An Historical account of the rise, progress and management of the General Hospital and Infirmary in the city of Bath, Bath, 1758.

37. W. Baylies, Practical reflections, op.cit. (36), 62-70.
38. See. S. MacIntyre, 'The mineral water trade in the eighteenth century', Journal of Transport History, 1973, 2, 1-19.
39. W. Baylies, Practical Reflections, op.cit. (36), 168-170. The appointment of William Oliver's son to the staff of the hospital in May 1758 particularly irked Baylies.
40. Critical Review, 1758, 6, page 157.
41. A short answer to a set of queries annexed to a historical account of the infirmary in the city of Bath: by a governor of the said charity (n.d.). See also W. Baylies, A Full Reply to ... a short answer to a set of queries, London, 1759; Baylies recalls, in this response, the case of Archibald Cleland.
42. W. Baylies, A Full Reply (footnote 41) page 12.
43. See also Charles Lucas, An analysis of Doctor Rutty's methodical synopsis of medical waters, London.
44. J. Rutty, The argument of Sulphur, page 63.
45. For a further discussion of the place of 'natural symbols' in disputations of this kind, see B. Barnes and S. Shapin Ceds)., Natural Order, Beverly Hills, Calif., and London, 1979.

46. Rutty gave the coda to the affair by writing a spoof obituary for Charles Lucas at the end of his work A Free and Candid Examination, London, 1758.
Interestingly, James Joyce recalls the Irish feud between Lucas and Rutty in Ulysses and also in Finnegan's Wake: see J.B. Lyons, James Joyce and Medicine, Dublin, 1973, pages 150 and 153.
47. A classifiCatiot was Attempted by William Falconer in his A Practical Dissertation on the Medicinal effects of the Bath waters, Bath and London, 1790. As J.K. Spender indicates in his Bath Thermal Waters, op.cit. (29), Falconer employed a different taxonomical languagefixanhis predeceessors, subsuming sulphur under the general heading of 'saline bodies' and distinguishing these from metallic, earthy and aerial bodies.
48. On Graham, see Roy Porter, 'The sexual politics of James Graham', British Journal for eighteenth century Studies, 1982, 5, 199-206.
49. According to the entry on Graham in the Dictionary of National Biography, written by George Thomas Bettany, Graham met Franklin In Paris in 1779 and went on to visit \$t, Petersburg,
50. \$ee The Guardian Goddess of Health or the Whole Art of Preventing and Curing Diseases, London, 1780-1783; a selection of Graham's writings of interest are The

General State of Medical and Chirurgical Practice exhibited, showing them to be inadequate, ineffectual, absurd and ridiculous, sixth edition, London, 1778; A lecture on the Generation, **Increase** and Improvement of the Human Species, 1783; A new, plain and rational treatise on the Bath waters, Bath, 1789.

51. See Philip Thicknesse, A valetudinarian's Bath guide, London and Bath, 1780, especially Chapter 2; idem, An epistle to Dr. William Falconer of Bath, Bath, 1782, which also contains a defence of the analysis made of the Bath waters by Charles Lucas.
52. See the 'advertisement letter' from Edmund Rack, in Graham, The General State of Medical and Chirurgical Practice exhibited (footnote 50) page 43. Rack **spec**ifically approved of the Aetherial Vapours.
53. Graham, The General State, op.cit. (50), passim. In his Address to the inhabitants of Great Britain, London, 1775, Graham claimed considerable success as an oculist and aurist in the area round Bath and Bristol in 1774 and 1775. From May 1st to mid December 1774, while in Bristol, he claimed to have cured 417 patients, refusing 391, and finding 114 incurable.
54. See Roy porter, 'Philosophy and politics of a geologist; G.H. Toulmin (1754-1817), Journal of the History of Ideas, 1978, 39, 43550.

55. See J. Graham, A short treatise on the qualities of the simple earth, Newcastle upon Tyne, 1790.
56. See P. Thicknesse, A valetudinarian's Bath guide, op.cit (51), chapter 2.
57. P. Thicknesse, An epistle to Dr. William Falconer, op.cit. (51), pages vi-vii.
58. On Erasmus Darwin, see Desmond Ring-Ilele, Doctor of Revolution, London, 1977. On John Brown, see G. Risse's forthcoming study, based on his thesis from the University of Chicago; J. Thomson, An account of the Life, Lectures and Writings of William Cullen, 2 vols., Edinburgh, 1859.
59. A sketch of the attempt to reduce the over complicated model of disease prevalent at the time to its simplest components (based on irritability, **as a mean**) was given by C.J. Lawrence and M.R. Neve in a paper entitled 'Sudden death: an essay in the historiography of eighteenth century medicine', at the conference for the Society for the Social History of Medicine, September 1978. See also W.R. Trotter, 'John Brown and the non specific component of human sickness', Perspectives In Biology and Medicine, 1978, 21, 256-64.
60. A point stressed/`rorrens In his article in Jordanova and Porter, Images, op,cit. C28).

61. See V.J. Kite, Libraries in Bath 1618-1964, a thesis held at Bath Central Library, pp. 3-23.
62. Kite, op.cit., (61), page 58.
63. For Barlow and the early years of the Provincial Medical and Surgical Association, see Patricia Craig, 'The first B.M.A. meeting in Bristol', Bristol Medico-Chirurgical Journal, 1983, 98 (iii), 104-108. Barlow regarded the cholera epidemic of 1832 as an act of God, which doctors ought not to have been expected to control.
64. See the Bath Guide, for 1806, and for 1810, the latter year providing a slightly fuller account of the developments in these years.
65. A typical resume of the activities of the puerperal or child-bed charity is provided in the Bath Guide for 1801, some eight years after the foundation of the charity.

66.	See the <u>Bath Guides</u> for 1812 and 1815.	
67.	See <u>Kite, op.cit.</u> , (61), chapters 3 and 4.	
68.	Spurzheim lectured at Bristol in 1827.	
69.	See the entry under P.B. Duncan in the <u>Dictionary of</u>	
	<u>National Biography</u> , written by Warwick	William Wroth,
	and also the <u>Gentleman's Magazine</u> , 3rd	series, 1864,
	16, 122-26.	
70,	See <u>Kite, op.cit.</u> , (61), page 72.	
71.	Catalogue of the library and museum of	the Bath Royal
	Literary and Scientific Institution, 1835, kept in the	
	Reference Library at Bath as a 'pamphlet' number 22904.	

72. See the discussion of Bristolian examples of this incorporation of French comparative anatomy, that appears in Chapter 7.
73. Chartism in the West Country was comparatively weak, although some revision is needed of the account by John Cannon, The Chartists in Bristol, Historical Association Pamphlet, Bristol, 1964, where the extent of support for the movement is underestimated.
74. See the Bath Guide for 1840 where there is a full discussion of the changes in the history of the Lock Hospital. The relationship between medical and moral management in the history of Lock Hospitals is discussed, in the London example, in M.R. Neve, 'Methodism, venereal disease, and polygamy: the Reverend Martin Madan and the early history of the London Lock Hospital' to appear in the journal Eighteenth-Century Life (Williamsburg, Virginia) in 1985.

Chapter 4

The investigation of provincial and metropolitan scientific cultures in the nineteenth century is at the same time an investigation into the varieties of local social history. Physical geography and cultural geography were inextricably involved with each other, and the two dimensions were bound together and explicated by the idiosyncracies of local social structure. The movement down through the strata of historical generalisations has already gone far.¹ There remain however certain possibilities that require study.

Science and its cultural **uses** can still, for perfectly proper historical reasons, be linked in the early nineteenth century to two main historical vehicles: Dissent and Utility. In the case of the relation between science and Dissenting movements, it has been suggested that a fertile scientific culture was generated among 'marginal men' as a means of social legitimation. In the case of Utility, science has been shown to have been of use to a variety of distinct social groups, most famously to improving landowners in the lowlands of Scotland for instance, and through the institution of metropolitan societies which were made to serve, however briefly, the purposes of landed classes.² In his study of the Royal Institution, Berman has broken open the question of provincial and metropolitan relations by showing how an urban elite only gradually came to control an institution actually placed in the heart of the metropolis, and has

related this to the gradual strengthening of urban, utilitarian, professional power in nineteenth century Britain in general.

It is possible to add further to these striking historical insights. A dimension that has not received sufficient examination, despite researches into 'social control' and other ideological issues, is that of scientific conservatism, where science plays a decisive role within established elites in the manufacture of a new language of authority and political power.³ Here, the position and purposes of provincial, socially established, bourgeoisies and their relation to promoting an effective social order are of interest. Science, in some provincial contexts, was not produced through radicalism and marginalism, nor was it a cultural form that made a passage from 'outsider' to 'insider' between say 1780 and 1840. Instead, in centres such as Bath and Bristol, it developed inside already powerful and confident social elites, whose political task in the period 1780-1830 was a prolonged attempt to solidify power with the still hegemonic ruling landed class. 'Bourgeois science' can then be investigated as part of that nervous historical collaboration between bourgeoisie and aristocracy that has engaged so many political historians of the nineteenth century.⁴

The theme of this chapter is that far from posing threats to the standards of established culture and religion, 'science' was a system that developed within that culture with the purpose of strengthening it. This

would certainly be the --onclusion of a historical perspective taken from Trinity College Cambridge or Oxford University, rather than from Manchester or Newcastle. As Thackray has argued, it was also the case that science acted as a stepping stone for Dissenting families in Manchester to achieve the status of Anglican landowner. But the process of 'assimilation' or 'penetration' (the choice of word is a political one) occurred not only early, but also at different speeds in older centres and in the newer industrial provincial centres. The adoption of natural philosophy was not always a move from marginality to centrality, or radicalism to conservatism. Instead, it formed, in the case of Bristol and elsewhere, one part of the efforts of an already well established social elite to maintain its domination, through the development of scientific languages and institutions. It can even be argued that certain political differences, such as Whig and Tory, became acknowledged as outmoded: if maintained, they were used to give the appearance of political conflict. The more urgent task was the coining of a language of natural power that was also a political language.⁵ In certain examples, of which Bristol is one, the casting aside of relatively uncontroversial oppositions applied to elite religious affiliations as well.

Two fruitful areas of research for developing these ideas may be suggested. First, a detailed study of the number of 'conversions' of Dissenting individuals into established religion as a response to the destruction of

the French ancien regime. How widespread was this? Second, what devices were at hand for promoting, through science, a political collaboration between bourgeoisie and aristocracy? One good candidate was the British Association for the Advancement of Science. The BAAS may well have been the perfect, migratory common ground upon which provincial bourgeoisies met, to maintain an essential aristocratic connection, and to exclude all voices that failed to contribute to the crystallisation of the new conservatism. Whether or not this rapprochement was successful, it is surely useful to recognise the highly conservative, but far from moribund, aspects of early nineteenth century scientific culture. What is needed is not the sociology of exclusion, but evidence, from science as well as politics, for the formidable conservative achievement of Sir Robert Peel.

In terms of the liveliness and duration of its scientific culture, the mercantile centre of Bristol offers a much slighter story than Edinburgh, Newcastle, Manchester and London.⁶ Its wholehearted conservatism was of a type with say, Bath or York, but at odds with the developing industrial areas. Scientific activities in Bristol were never prolonged or particularly successful. As has been seen, Bristol was a commercial Atlantic port which from 1800 onwards was entering a period of relative decline. It produced a short lived scientific institution, as well as certain other scientific activities, which remained viable

until the middle of the century. From 1850 until about 1880, the main impetus for scientific and intellectual enquiry came from the city's medical men, although their domination was not so obvious in the earlier period. The latter part of the nineteenth century saw a new stage, as well as certain new forms, of local intellectual culture.⁷ The commercial circle who had funded organised science in earlier years had died out; economically, the 1830s and early 1840s were particularly difficult in Bristol's history; thus, the increased importance of medical men within local intellectual life was related to the enhanced status and organisation of medicine, but was also to do with the passing away of financial authority from those who had established local science in the first place. A desire to underwrite philosophy and literature as forms of cultural display was both less possible - and perhaps even less desirable - from the late 1830s onwards. The 1836 visit of the British Association for the Advancement of Science to Bristol was both an act of recognition, designed to please a non-university commercial clientele, and also a kiss of death. The signs of awakened activity among Bristol's medical men in the later period, which will be discussed in Chapters 6 and 7, took place in a relatively diminished cultural climate. Medical men both made their own societies, and also made use of the exhausted institutional forms that had been established in the 1820s.

Scientific culture in early nineteenth century Bristol was markedly non-utilitarian, and conservative. It was

not the product of 'marginal men', but rather the brief achievement of a well established, predominantly Anglican, bourgeoisie, the sources of whose wealth had been secured for at least two generations. Indeed, the activities of philosophy and science, in a local setting, can be pinpointed even further. The merchants, professional men, doctors and clergy who wanted such activities to flourish lived in the salubrious sections of the city - essentially uphill from the Cathedral, through St. Michael's parish, and into the village of Clifton. Some part of the community of paid-up activists came from the hinterland of the city - Gloucestershire, South Wales. But the poorer sections of the city of Bristol, in the East, and South of the river Frome, knew nothing and, no doubt, cared less, for the 'culture' of science and letters. 'Appropriate culture' for the populace of Bristol was pugilism not philosophy: Bristol was a famous centre for prize fighters, but even here the class divisions within local culture were evident. St. James's Fair, which lasted a fortnight, was held annually, and where prize fighting regularly took place until it was suppressed in July, 1838. The culture of science, unsurprisingly, was of interest to members of elite religious affiliations: Anglican, Unitarians and members of the Society of Friends. It was not of concern to the Congregationalists or even Methodists. Rather, the established, politically entrenched groups in the city involved themselves, as audience, patrons and practitioners in promoting science, literature and the arts. As

suggested in Chapter 1, part of the cultural point of funding philosophical activity was to connect with, and imitate, other national developments.

Scientific culture in Bristol in the nineteenth century bore the marks of this imitativeness. It would be wrong to take the obvious cultural differences between the 1770s and the 1820s, most especially the marked evangelical atmosphere of the nineteenth century, as an indication of cultural independence. The imitative relation to the senior cultural modes of the realm remained wholly intact even when ballroom gave way to Bible society.⁸ The historical point to be stressed is that in both Bath and Bristol during the Enlightenment, interested parties could read via library and newspaper about a wide range of intellectual and cultural matters without there being any particular institutional setting to do this in. It is the commitment to organisation - even something so simple as having a building - that distinguishes the nineteenth century. Both these West Country centres may well have been in a state of voluntary dependence on metropolitan forms which only industrialisation could break, and major industrialisation left only limited marks on the economy of the West Country. Despite the improvement in mining techniques at for example Radstock Colliery through the use of steam winding from 1804, and increased capitalisation from the Dowager Countess Waldegrave; the maintenance of the Kingswood mining industry; the attempted improvement

in the methods **of access** to the Bristol docks from 1802 onwards (not one that proved remunerative) **and some** improvement to the surface of turnpiked roads; despite all these, Bristol remained **essentially** a manufacturing (even minor industrial), entrepot port. But major industrialisation, as many historians have remarked, was not a West Country experience? As far as the period 1820-1860 is concerned, the Bristol social elite developed institutions and contacts with a re-awakened evangelical movement and with the forms and commitments of an alert conservative establishment. Bristol's scientific culture was a secondary formation, based on the need of its proponents to attach themselves to the 'new conservatism' of post Napoleonic Britain.¹⁰ And the chief scientific institution established by the merchant and professional classes of elite religious affiliations, was the Bristol Institution for the Advancement of Science (1823) ; this was highly exclusive, set as it was in a city whose other governing bodies - most famously the Corporation - were notoriously aloof. That Corporation was dominated by Tories from 1812 onwards, although the two member seat of Bristol was effectively shared by the winning candidates, even when ostensibly politically opposed. It was in front of this austere Protestant and moralistic company that Sydney Smith took pleasure in lecturing on the need for religious toleration when he visited the city in November 1828.

The economic sources for the financing of science and scientific institutions in Bristol in 1820 came from eighteenth century mercantile roots.¹¹ Bristol had been the centre of trade and communications in the West of - England, and its main activities **were:** its port, the **production of brass and iron, often for shipping:**

derivatives of the West Indian trade, especially sugar (there were at the end of the eighteenth century more than twenty refineries); and alongside these, the lesser activities of glass production, **soap**, porter, tobacco, lead shot, and chocolate. Banks abounded, often owned by families with accompanying interests in commercial enterprises. The city boasted a large number of charities and philanthropies: an Infirmary founded in 1736; an idiosyncratic 'Corporation of the Poor' with its combined lunatic asylum and poor-house, St. Peter's Hospital; a cathedral that had Joseph Butler as Bishop in the 1730s; and a residential suburb, Clifton, that became by the 1830s and 1840s, but not earlier, a by-word for a salubrious, separate 'village' environment, away from the city itself.

By 1800 the relative decline of Bristol's economy began to make itself felt. Population had increased to **near 85,000** but the **mercantile economy was weakening-¹²** Attempts to improve harbour facilities to deal adequately with the wide tidal range of the Avon (later to prove of 'scientific' interest) **exposed weaknesses** and conflicts

between the Dock Company, the Society of Merchant Venturers and the notoriously self-protective Corporation of Bristol.¹³ The taxes payable on ships and goods coming into Bristol were considerably higher than those levied in London and Liverpool. Bristol had become too dependent on West Indian and Irish trades, themselves beginning a steep economic decline, and a post-war 'mini' boom could not conceal severe structural faults. In areas of manufacturing such as glass, the relative decline was emphasised by developments elsewhere in Britain, notably Lancashire. There was not industry in Bristol comparable to the new industries, such as cotton, in the North.

An elite of local merchants, whose wealth was based on sugar, brass, iron founding, lead shot and banking, and the West Indian trade itself, experienced difficulties in the period 1820-1840. Families such as the Harfords (banking, brass), the Vaughans (merchants), the Daubenys (banking, sugar and general commerce), the Ricketts (glass), the Acramans (iron), the Fripps (sugar, candles, soap), the Miles (merchants) and the Georges (brewing) were all locked together in a 'commercial freemasonry', and on the point of sharing a collective downward fate. Alford suggests that none the less

... once an individual businessman has achieved a solid level of prosperity, profit maximisation usually becomes an 'inferior' good. Both glass and tobacco provide examples of later generations of established families withdrawing altogether

from business during the 1820s and 1830s
in order to follow more gentlemanly pursuits,
and, from what is known of others of their
kind, they appear quite typical.¹⁴

It was from this equivocal base, from sources of wealth that had 'peaked' and now sought only their own self-protection, that most local scientific activity up to 1850 came. The decline of this clique, and the decline of the scientific ideology that it promoted, marks off the economic and cultural history of Bristol in the first half of the nineteenth century from that of the second half.

Before the establishment of the Bristol Institution in 1823, local scientific culture consisted of sporadic lectures and exhibitions chiefly by itinerants.¹⁵ There also existed, from about 1809 a 'Literary and Philosophical Society', which met in St. Augustine's Place and then at no. 1 Trinity Street. Lecturers here included the geological writer Robert Bakewell (1768-1843) lecturer in March 1817, concurrently lecturing at the Russell and Surrey Institutions in London; John Jackson also of the Surrey Institution; Robert Addams of the Royal Institution, and one Bristol activist, Michael Fryer, F.S.A., teacher of mathematics and secretary to the Society who lectured in 1811, and then in July 1817. Subscriptions to put the society on a sound footing appear to have reached between five and six thousand pounds by 1809,¹⁶ and fluctuated in

the course of the society's quirky history. Sporadic lecturing in the city had also been provided by some local medical men, including Thomas Beddoes (1760-1808) who had been assisted in lectures on anatomy and chemistry in 1797 and 1798 by two local surgeons, Richard Smith and Francis Cheyne Bowles. Beddoes, as described in Chapter 2, was at the centre of an idiosyncratic group based around his Pneumatic Institute in Clifton, and no other institution grew out of his various medical activities. Attempts to set up a permanent room 'where all branches of philosophy might be given' had been countermanded by the Dean and Chapter of Bristol Cathedral, partly because of Beddoes's political tendencies; in any event, Beddoes's Jacobin skills did not extend to making his anatomical and chemical explanations comprehensible to a more conservative Bristol audience. 17

Developing alongside this semi-organised scientific activity (activity that in Beddoes' case was based on a network taking in the Midlands, Birmingham and the Continent as much as at Bristol), there also began that rash of 'philanthropic' concerns that were the mark of bourgeois nervousness resulting from the events in France. Bristol now added to its already large number of established charities the Bristol Auxiliary Bible Society (1810); the Bristol Church of England Missionary Society (1813); there was increased support for the Bristol Diocesan Schools; the Church of England Tract Society, (Bristol branch was founded in 1811); the Prudent Man's Friend Society in 1813,

and the Bristol Union Society for the Promotion of Sunday Schools in 1814. Finally, the Bristol Savings **Bank was** started in August 1817. Throughout this period, the city's elite gathered at endless meetings calling for the defence of the Protestant constitution, there to toast its one-time **M.P. Edmund Burke, to stress the need to increase** charity in times of economic distress, and to subscribe heavily to the British and Foreign Bible Society. The sense of threat from the city's Methodist groups and from the disturbances in the mining communities of North Somerset and Kingswood was strong. A history has yet to be written of the powerful menace of the bandit gang who raided from Cockroad, near Kingswood, before being imprisoned and 'educated'. The Bridge Riots of 1793, the Reform Riots of 1831 and the pauper riots in St. Peter's Hospital in 1832 - all speak of a violent popular politics. Not surprisingly, Bristol's share of Lord Liverpool's £1 million grant of 1818 for the building of Anglican churches was spent on a church put up in the alien proletarian world of St. Philip's Marsh.

The final securing of funds to establish a scientific institution coincided with these events. The Bristol Institution for the Advancement of Science, Literature and the Arts was effective from 1823, the same year as the new Chamber of Commerce was opened. There is a clear overlap between those who financed the philanthropic, commercial and cultural activities that began in the period 1810-1825.

Apart **from the families mentioned as part of** the commercial '**inner circle**', the core financial group **was dominated by** Tory Anglicans, including **D.W. Acraman, ironfounder and** patron of the local artistic community; **Thomas Daniel** (1763-1854), senior civic **figure and West Indian** merchant; John Kerle Haberfield (1785-1857) another convert to Anglicanism and an attorney; Christopher George (1786-1866), lead shot manufacturer, and Philip and Richard Vaughan (1767-1833). The leading Whigs associated with the Institution **were** sociologically indistinguishable from this group, and included the West India proprietor, Richard Bright (1756-1840) whose third son, Richard Bright (1789-1858), was a Fellow of the Geological Society of London and discoverer of 'Bright' **s disease**'. Like Richard Bright senior, another local Whig, Michael Hinton Castle (1785-1845) was a Unitarian, and a distiller. **In some** leading Unitarian families, the Ricketts and the Lunells, there were conversions to Anglicanism. But in no **sense was the** Unitarianism founded on the Lewin' **s Mead Meeting an** 'outsider' culture. Bristol Unitarianism, from the time of John Prior Estlin (1747-1817) to well beyond the end of the ministry of Lant Carpenter (1780-1840) was an intrinsic part of middle class activity within the city.

One important spur to the development of scientific culture **was noted** by the Tory **newspaper** editor John Mathew Gutch (1776-1861), of Christ's Hospital and friend of Coleridge and Lamb, in a letter in his own paper in October

1822. Gutch voiced the fear that commercial life and science were antithetical, but pointed out that a number of figures had 'risen up' in Bristol who could bring science to new and beneficial heights. 18 Gutch was thinking specifically of James Cowles Prichard, ethnologist and physician at the Bristol Infirmary; William Daniel Conybeare, then lecturer in the nearby parish of Brislington, and geologist; and George Cumberland (1754-1848), anti-quarian, geologist, patron of William Blake and retired insurance broker. It was time, said Gutch, to finalise the plans for an institution to house these talents. Another important organisational figure then in the city was **Henry Beeke** (1751-1837), **Dean of Bristol**, product of the home of 'liberal Anglicanism', Oriel College Oxford, geologist and Regius Professor of Modern History at Oxford, 1801-1813. Beeke involved himself in scientific and clerical pursuits, and was also chairman of the Bristol Savings Bank from August 1817.¹⁹ The presence of these men involved the Bristol Institution in the setting up of a separate 'Philosophical and Literary Society' where local savants might give papers in a more intimate atmosphere. However, the 'Phil and Lit' was housed in the same building, membership of it was open to all members of the Institution, without election, and in the period 1823-1860 almost all members of the BI were members of its 'active satellite', the 'Phil and Lit'.

Bristol saw then an identity between those who financed its philanthropic and scientific activities; within the Bristol Institution, there was identity between members of the BI and the 'Phil and Lit'; and only then does a real distinction appear, between the 'managers' of these societies, all of whom were eminent civic figures, and scientific 'activists' such as Prichard and Conybeare.

One central figure, neither cleric nor scientist, but a leading art patron, requires highlighting, since he was the leading medium through whom the BI contacted the Oxbridge and metropolitan conservative culture which it imitated and to which it sought attachment. This was John Scandrett Harford (1785-1866), FRS, inheritor of the brass and banking fortunes of that family, a Quaker convert to Anglicanism,²⁰ and a man who gave up mercantile pursuits to orchestrate the growth of Tory activities in Bristol. He was close to Hannah More, who gave financial support to the BI and whose obituary he wrote; a correspondent of Whewell's at Cambridge, a friend of Wilberforce, and an activist in almost all the evangelical societies in the city. A large landowner in Cardiganshire, Harford published in 1818 an attack on the life and character of Tom Paine.²¹

He was a central organisational force in the BI throughout its active life, and the contact manager with the 'Cambridge network' that activists such as Prichard and Conybeare were anxious to maintain. Conybeare himself

of course kept up links with Vernon Harcourt in York, the effective founder of the York Philosophical Society. Harford's little book on Paine was not merely an assault on Paine as an individual, but also, by implication, an attack on the radicalism of the 1815-1818 period. Harford's own career has one aspect that suggests itself as a fruitful avenue of historical research: he was from a Quaker background, but a convert to Anglicanism as has been mentioned. He shared this movement into Anglicanism with the ethnologist Prichard.

As has been noted, the biographer of Thomas Beddoes, J.E. Stock had been a medical student at Edinburgh during the 1790s and seems to have been involved in student radical circles, even associating with the republicans Robert Watt and David Downie. For their activities, Downie was eventually deported and Watt hanged, drawn and quartered. Stock completed his medical education in America, under Dr. Benjamin Rush, in Philadelphia, returned to England (via France) and married, in 1803. More to the point, he engaged in a debate with the Unitarian minister Lant Carpenter about the merits of the Unitarian faith, which he eventually abandoned in 1816, expounding a belief instead in the Divinity of Christ.

Part of the historical difficulty in placing the career of Thomas Beddoes stems from the fact that the choice of biographer that his wife Anna made was a political one: the: now conservative J.E. Stock could write a biography

that would underplay the political radicalism of Beddoes' early years.²² The same difficulty holds for **mapping the careers of a number of converts to post-war conservatism in nineteenth century Britain:** that the available public record acts as a disguise on earlier **persuasions and activities . Even a moderate convert** such as J.S. Harford would make an illuminating case-study, providing, in the Bristol setting, a medium for corresponding with national figures such as William Whewell or Baron Bunsen.

The Bristol Institution for the Advancement of Science, Literature and the Arts was divided, in a rather unusual way then, into two sections - the 'Institution' and the 'Lit and Phil' with closely overlapping membership- 23 Membership of the Institution was achieved by the purchase of shares, which cost twenty-five pounds each. These proprietors of the Institution could then, having purchased a number of shares, elect persons as 'annual subscribers', subject to approval by the Committee of the Institution: these annual subscribers were not permitted to take part in the management of the Institution. It may be helpful at this point, to give an idea of comparative money values, to indicate that the porter in the building of the Institution (one of the first was a relative of the millenarian writer Joanna Southcott) was paid £15 per annum, and the attendant in the reading room was paid £50 and the curator £150. On top of the purchase of £25 shares, members of the Institution had to pay an annual subscript-

ion of two guineas. The mayor of Bristol, the city's M.P's, and all noblemen (if members) were also to be honorary vice-presidents. The major part of the financial back for the BI came from the commercial sources already mentioned - lead shot, sugar, soap manufacture, iron-founding, merchant interests, some of them West Indian, and of course banking. There is no doubt that many shares were purchased as a straightforward speculation, one that did not turn out to have any long term commercial advantage.

The Philosophical and Literary Society was an enclave within the Institution **therefore**, consisting **of members** of the Institution **who were admitted** without election 'on **assenting** to the **rules of the Society**'. A list of the **papers read** to the Philosophical and Literary Society is included **as an appendix**. But one early example of its activities **is of interest**: the gathering of £525 for the **purchase of minerals** gathered in a collection by Joseph Blisset, esq. The purchase was arranged by Richard Bright esq., and the Reverend W.D. Conybeare. But the **purchase of shares** did not, in the early **stages of the BI**, extend **as much as had been hoped**, there being a shortfall of £500 owed to the building **fund in 1825**. Thus, while **the minerals were purchased by a separate collection of funds**, the Institution could not afford to join the subscription lists for the **anatomical colour plates of Pauli Mascagni**, to be published by Stanislaus Grottanelli, **Professor of Medicine** at the University of Siena. The Bath Literary and Scientific Institution, **founded between 1824 and 1825**, did join this

subscription list.²⁴

The early years of the BI - 1823, 1824, 1825, 1826 - were undoubtedly affected by what was described in the contemporary press as 'the late painful crisis' in the commercial world. Shares were not rapidly filled up, and there were constant financial troubles. By 1827, debts had been liquidated, helped by the donations of the Right Honourable Charles Bathurst. The Committee could praise the stabilisation of the financial situation at its fourth annual meeting; announce the arrangement of the mineral collection on the lines of Phillips' third edition of his Introduction to Mineralogy, and even welcome the lectures of Doctor Spurzheim, lecturing on the allegedly dangerously 'materialist' question of phrenology. Likewise, order was coming to the geological collection: Conybeare and Phillips' Outline of Geology was to be the system followed. Average annual expenses for the years 1824-1827 were about £1100-£1250 per annum. Donations of all kinds poured into the Museum, the Philosophical and Literary Society entered its most active phase. By 1828, the curator's salary was £180; the assistant's £60; the porter's £20-7-6. Fraternal greetings were sent to the new Bath Literary and Philosophical Association, which had the Marquis of Lansdowne as President, Sir John Cox Hippisley as one of the trustees, a library (partly that of William Beckford) of over 1700 volumes and was badly undersubscribed when shares at 20 guineas first went on sale. It led a sporadic and 'declinist' career into the middle of the century.

The Bristol Institution did have one important absence: attempts to amalgamate with the celebrated Bristol Library in King Street came to nothing. The non-existence of a library of any great size, and the existence instead of only 'reading rooms', with books, periodicals and newspapers, **wasr** a contributing factor to the brief life of the Institution.

The range of periodicals and transactions that the Reading Rooms managed to keep up provide some insight into the finances and even intellectual orientation of the BI. The Philosophical Transactions were kept up all the way from 1823 to 1862; there were long runs for the Edinburgh New Philosophical Journal; the Annals of Philosophy; the North American Review; the Foreign Quarterly Review; Blackwood's Magazine; Magazine of Natural History (which was incorporated into the Annals of Natural History); the United Service Journal; the 'Calendars' of Oxford and Cambridge Universities; Annals des Sciences Naturelles; and Mirror of Parliament, and the Edinburgh and Quarterly Reviews. Many of the specialist scientific journals were discontinued such as the Linnean Transactions, and the Annales des Mines, Annales de Chimie, and Revue Encyclopedique. And for example, the Gentleman's Magazine was taken for ten years, from July 1823 to November 1833; likewise the Monthly Review, discontinued in 1845.

Similarly the Reading Rooms would not here see the intrusion of any of the range of unstamped newspaper

literature that appeared, subversively, after the six 'gagging' Acts of 1819 up to the newspaper legislation of September 1836 which marks the enlargement of the unstamped periodical and the stamped weekly. The reduction of Stamp Duty and harsh penalties for printers, publishers and vendors, virtually ended the unstamped press as a form. But, as Hart has shown,²⁶ there was much going on in Bristol in those years, notably the activities of the radical James Acland as well as Tory ripostes such as the Bristol Job Nott. The BI would not have seen these, nor would its clientele have wished to. Instead the Tory FFBJ, (which increased in size from 1830), the pro-reform Bristol Mercury, and the various metropolitan ministerial and non-ministerial press would have dominated. Some of the membership might have read the pro-slavery interest Bristol Observer (1819-1823) but it never appeared in the BI reading rooms.

An important historical question concerns the importance of medical men in the affairs of the Institution, and more importantly, of the 'Phil and Lit'. Although they played an important role, medical men did not dominate until the mid-1840s (see Chapter 6). And of the medical men who were active it was unsurprisingly, the physicians who were most prominent in the 'Phil and Lit': J.C. Prichard, Andrew Carrick, George Wallis, Henry Riley, J.E. Stock, and John Addington Symonds. Another important figure, slightly outside the elite circle was the anti-slavery activist and eye surgeon, the Unitarian J.B. Estlin.²⁷ But the Bristol Institution's society-within-a society was quite as much the place for the quirky antiquarianism of

the Reverend John Skinner (1772-1839) as it was the province of local medical men. And the BI itself cast its own net wide, having members like the Dowlais iron master J.J. Guest (1785-1852), the Dowlais trustee, engineer and archaeologist G.T. Clark (1809-1898) and the Monmouthshire landowner and Poor Law reformer J.H. Moggridge (1771-1834). Within the city of Bristol itself, its constituency stretched no further into the social spectrum than Tory landowner and gentleman, to constitutional 'Whig' minor merchant or professional man.

The actual building itself was erected on a difficult site near the Cathedral, at a cost of nearly £11,500.

C.R. Cockerell (1788-1863) was the slightly petulant architect, and his work was much in fashion, combining neo-classicism with an eye for applying such styles to commercial and scientific buildings. He worked on banks,

and on the new Ashmolean Museum at Oxford.²⁸

The Presidents of the BI were Lord Grenville, President until 1833; the Duke of Beaufort, and the Marquis of Landsdowne.

Examining the lectures and activities of the Institution, a busy period is manifest between 1823 and 1836. The setting was as deliberately patrician as possible; an unusual special lecture given by Norton Webster to an audience of specially selected mechanics in December 1824 was continually singled out in the records of the BI as an example of munificence and of correct social behaviour on the part of the 'invitees'. The social relations of

33rd April 2nd titution.

Professor of Chemistry

IN THE ROYAL CORK INSTITUTION,

WILL COMMENCE

.a A Course of Twelve Lectures

ON THE

ELEMENTS

of

Chemical Philosophy,

IN THE

LECTURE ROOM OF THE INSTITUTION,

On WEDNESDAY NEXT, 23rd April, 1823,

AT TWO O'CLOCK.

The Second Lecture will be delivered on FRIDAY, the 25th ; after which the
Course will be continued on Mondays. Wednesdays, and Fridays.
till completed.

For the convenience of those who cannot
attend in the Morning, the Lectures will be
repeated in the EVENINGS of the above days,
at SEVEN oClock.

Ticket for the Course, One Guinea.—Admission to a single Lecture, Sixpence.

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attendance upon 'scientific' occasions was explicitly hierarchical, and polite: this **was a** legitimate cultural activity, one that apparently denied political and religious differences, and one that led to edification.

In endeavouring to render an Institution designed for and supported by the higher classes, in any degree subservient to such purposes, the acquisition of knowledge is represented in its most beneficial and becoming relation, as a boon, emanating from the superior to the inferior; and this, far from exerting any disorganising influence, becomes a new and strong bond in the fabric of society.

It was precisely through a culture that surveyed 'scientific' questions, ranging from religion to statistics, that the revived language of hierarchy would be found, and a collaboration within the urban elite effected. 29

The pattern of lectures at the BI up to 1836 was varied, and to try to see an 'integrated ideology' within them may be dangerous. But lecturers were pursued and invited who deliberately evoked the tone and grandeur of the higher reaches of the 'progressive' sciences.

Charles Daubeny (1795-1867) newly appointed Professor of Chemistry at Oxford, gave an opening address at the BI in January 1823, assuring his audience of the strengths

that science (chemistry especially) might derive from commerce; his visit was important because of local family connexions. In a nice twist of pretension and pathos, the Institution advertised chemistry lectures, also in 1823, by 'Mr. Davy'; in fact the lecture committee had managed to hire only Edmund Davy (1785-1857) Sir Humphry's cousin, and it was always of regret to them that the now highly successful, ex-assistant of Beddoes, never returned to Bristol to lecture. Other financially successful lectures were those of Sir J.E. Smith (1759-1828), the purchaser of the Li,^san Collection, given in 1825; and the double course of 1829, on elocution and reading, and on Shakespeare, of the tamed ex-Jacobin John Thelwall. Thelwall's double course had receipts of £160-13, of which Thelwall saw £100. The lectures in 1827, by Spurzheim on phrenology were also popular producing £160-7-6d, of which just over £80 went to the Institution. The lectures of the Unitarian minister Lant Carpenter, in 1830, on the 'powers of the mind' produced £109-2, of which one-third went to the Institution. Some local savants would give lectures all of whose proceeds would go to the briefly healthy but ultimately ailing BI funds: those of the eye surgeon Estlin on the structure and function of the human frame, and on the eye, yielded £92-10-6. Between 1825 and 1836, these 'boosting' lectures produced a gross profit of £600 to the Institution: not an enormous sum, despite the efforts of such as Estlin or the physician Henry Riley. On the literary side, the Marquis

Spineto, of the Royal Institution, gave popular lectures on literature in 1826: these would have attracted even further audiences had they not taken place during September of that year, which was, according to the BI's fourth annual report, 'too early in the season, 30 Spineto also discussed the 'History and Reading of Hieroglyphics', looking at the work of Delacy, Akerblad, Dr. Thomas Young and Champollion.

It is hard to estimate the size of audiences, even for the most successful meetings. The number of shares set down as the target at the origins of the Bristol Institution - the number to be sold if the Institution was to be fully capitalised - was 600, and these were never all sold; not that this indicates the actual size of the audience, since many heads of eminent families bought groups of shares. And no consistent record of attendance was kept at the Institution. Financially, even by 1833, there were debts, (of £188-2-9 in that year) and, in the same year, 169 unoccupied shares. There is some evidence from the Institution's financial records that sales of shares took place- where the amount paid was less than that asked by the Institution: that some part of the membership saw the commercial worth of affiliation as no longer of importance, and could not maintain enthusiasm for longer than a decade. In 1834, the deficit was reduced to £69-13-7, partly thanks to a legacy of £90 from Hannah More. Bearing all these facts in mind, it is unlikely that the audience even for Spurzheim's phrenology lectures reached over two hundred and fifty. This low figure should not be compared with

the attendances at the 1836 meeting of the British Association for the Advancement of Science, since this visit was a pageant, and a sign of achievement for Bristol's social elite, and could even be deemed the reason for keeping the Bristol Institution, and its membership system, going, up to 1836.³¹

The lectures at the Bristol Institution up to 1836 (and sometimes beyond) whether on natural history, zoology, on the structure of the eye, on the distribution of flora and fauna showed one marked, shared characteristic. There were always, either as coda or as part of the internal philosophy of the lectures, evident commitments to natural theology. The argument from Design, the miraculous creation of species, the perfection of vertebrate structure, all were reiterated and glossed, with references to Paley, Derham, or the curious 'Cuvierisme' of de Blainville.³²

Blainville made certain alterations, particularly in his palaeontology, to the Cuvierian scheme of earth history, with less emphasis on 'revolutions' and a series of 'catastrophes' in the geological record. But (despite his Catholicism) his idea that the Cuvierian 'embranchements' (to which Blainville added, by dividing the radiates in two, thus making five branches) marked a progress towards man, was attractive. Blainville also gave more room for linking types between groups; between the molluscs and the articulata, for example, he placed two intermediary groups - the barnacles and the chitons

(articulo-molluscs). It is of also importance to point out that at a working level of classification within the museum, it was perfectly possible for figures like Cuvier or Blainville to be preferred as philosophers of nature, while employing Lamarck's system for classifying shells. But in terms of pedagogics of impressing an afternoon audience of women (and children), the accent was always on natural theology, and the moral lesson to be derived from natural inquiry. The Linnean system of botany would be one important vehicle for such edification.³³ But so too could be the 1830 lectures by the Unitarian minister Lant Carpenter on the intellectual powers of man, or the **same author's lectures on the mental powers in March and April 1836**. Carpenter's Unitarian education meant that these lectures contained a good deal of associationist psychology and philosophy; Carpenter could praise the tradition of Locke, Hartley, Tucker, Reid, Dugald Stewart and Mackintosh; could argue that Royer Collard and Victor Cousin were accomplishing an intellectual revolution in France: but the pedagogical point would still be to come. This **was, and** it is of interest that it receives literary **formulation, a warning against Byron, as having an** imagination 'charged with the evils **of excessive** sensibility **and violent passion'**; and a **praise of Wordsworth, the poet** who combined imagination, religion and social duty, **especially in his sonnet 'Faith and Hope.'**³⁴ **Lecturers** might have different backgrounds or interests, and of

course different subjects. But the tenets of natural theology and the overall commitment to propounding a Christian account of the world could be mediated through a variety of forms.³⁵ As Brooke argues, and as summarised by Shapin, ambiguities in natural theology could be tolerated because the doctrinal imprecision was the 'foundation of its irenic function': even the lectures of the Unitarian Lant Carpenter contributed, via an idea of Christian poetry, to this arc of mediating theological pedagogics. ³⁶

This didactic, intellectualist dimension is in need of stressing because of the noticeably non-utilitarian nature of the BI's activities, with regard to any technical, practical questions. As has been argued heretofore, the culture of science in the West of England owed little or nothing to the impact of industrialisation, with perhaps some small qualifications regarding activities in the Bath area before 1800. This is meant in two senses: the demands of 'industrialisation' neither generated the various institutions of scientific inquiry; nor did industrial practice stimulate the scientific practitioner or audience into producing technologically useful innovations. The call for 'utility', and the prolonged discussion of usefulness and commercial advantage, these were the ultimate ornamental remarks and claims. The Bristol Institution housed very little apparatus, containing only a lucernal

microscope, an air pump, some meteorological instruments, and 'Atwood's- beautiful machine for estimating vertical motion'. When Thomas Webster, secretary of the Geological Society of London, lectured on geology in 1828, the BI activist **George Cumberland started a newspaper correspondence** in which local landowners were accused of ignoring the useful information that Webster had presented to them as clues to places to dig for coal. 37

The BI held a number of art exhibitions in its early years, as part of the resolution **of a sense** of provincial cultural philistinism. But even **here** the Christian version of nature was upheld: millennial paintings from the epic tradition, especially Francis Danby's 'The Opening of the Seventh Seal' ./were especially popular. These **were** displayed along with **old masters** - especially Salvator **Rosa** - from the Harford and Miles Collections, and with work from local Bristol artists, who collectively portrayed a pleasant local pastoral, ' . favouring **views of** the city from across the Avon at Rownham **Meads** or water colours of **local scenes**.38

The audience and the patrons of the Bristol Institution had generated an exclusive milieu within which conservative natural philosophy could combine with polite learning to provide an agreeable, sealed environment that **was free of** controversy and political debate. The BI was not an object of great enthusiasm after the first years of novelty had worn off, and its most active period

of life could be said to be no more than one decade, c 1823 to 1833. But the historical point to be brought out was that it was not financially supported by 'marginal men', but by established merchants and city professionals. It was non-utilitarian; its constituency, even within the city of Bristol, was elitist and established. This point will be emphasised below, by looking at the sporadic activities of the so-called 'Society of Enquirers', whose small membership, even in the 1820s, could see the Bristol Institution as exclusive. One does not have to argue that all members of the BI were 'reactionaries', although many of them were, and waited to see the paper John Bull included in the Reading rooms in the electoral crisis of 1830-1832. Quite as many of the membership would have seen the Reform Bill as a useful development, but within limits. One letter here captures the tone, from the geologist Conybeare to the Reverend W.V. Harcourt in 1831:

Whig as I have always been I must now confess a strong reaction in my own mind. It is high time I think for all honest men to lay aside all factious spirit of party and to rally strongly around real conservative principles. Of course I don't use that term in the narrow sense of the Tories whose ignorant obstinacy I fully believe to have been the main cause of this present crisis, but I trust all honest men will now unite in a safe and moderate plan of reform.

Conybeare went on to ask that 'the real middle classes (the great bulk of the moral and intellectual force of this country') be brought into the franchise; this would be accomplished by extending the franchise to £20 householders, but not £10: the latter move would 'let in the veriest mob and seems quite inconsistent with anything better than extreme democracy'.⁴⁰ It is impossible to make an exact prosopography of the electoral conduct of all the members of the Bristol Institution and its various committees, but the simple point to make is that the differences were laid aside within scientific and philosophical affairs, to, allow moderate Whigs and Tories to collaborate on matters of common interest: but this 'exclusion of politics' is itself a political judgement; the BI would not have been accessible to Owenite Socialists or the kind of radicals supporting James Acland in the 1830 election, at which the result was

R.Hart Davis (Ministerialist)	5,012
James Evan Baillie (West India Interest Whig)	3,377
Edward Protheroe (anti-Slavery and Reform)	2,840
James Acland (radical)	25

The deeply conservative J.C. Prichard could collaborate with the Whig geologist Conybeare. When attempts were made to set up a committee for defending the rights of the Greek people against the 'Turkish infidel' in 1824, they attracted both Whig and Tory support. The old Whig family,

the Brights, were important financial supporters of the Institutions. At the Bristol election of December 1832, there was a Whig candidate, J.E. Baillie, who was pro-slavery, and also a 'Liberal', Edward Protheroe, who was not. Baillie polled 3,159 votes, Protheroe 3,030 while the Tory candidate, Sir Richard Vyvyan topped the poll with 3,709 votes. Many of the Institution's founding members would have voted for the pro-slavery Whig, out of mercantile self-interest. The pollbook also shows that a number of clergy voted for Baillie.

In a letter to the Rev. W.V. Harcourt of August 1836, John Phillips said that the geology room of the Institution could hold three hundred and fifty people, 'if crammed'.⁴¹ We have suggested earlier that a crowd of two hundred and fifty would have been a good average crowd for any of the meetings of the Bristol Institution in its best years. Thus, the BI was the preserve of a small part of Bristol society, with an established mercantile and professional clientele with no petit-bourgeois elements. It may seem curious that the science that came out of such financial sources was quite so ornamental, so theological and orthodox, so non-utilitarian. But this it was - A device for cultural annexation to the Oxbridge network. The success of Spurzheim's lectures on phrenology do not indicate any 'materialist' thrust, or allow a historical conjunction to be made between an arriviste bourgeoisie and a

philosophy of social moral and mental life. The founders of the BI had already 'arrived', in economic terms; indeed, many of them - for example the Acraman family of iron and timber merchants - were to experience acute economic difficulties in the late 1830s and 1840s. Before this hiatus, such families, funded 'liberal Anglican science' as part of a general act of exclusion being effected by provincial bourgeoisies electorally and culturally in the period of Reform.

It is possible to argue, from a study of the sales of Bristol Institution shares from the late 1830s onwards, that the membership became less 'established' in kind: that a commercial elite had died away, or run into bad times economically !2 There were more unoccupied shares, as well as more booksellers, surgeons, hatters and instrument makers among the owners of shares. The BI itself was also less active, with smaller meetings and more enforced 'democratisation' of access, particularly to the museum. But in its most lively period, no such democratisation of access was sought; rather the reverse. This comes out very clearly when looking at the activities of the annexed Philosophical and Literary Society, from the early 1820s, and by studying these alongside other educational developments within the city of Bristol. It is historically reasonable to propose that, seen as a whole, elite culture in Bristol sought to form part of the gathering together of resources and symbols, whether Bible

societies, the BAAS, the anti-working class Reform Bill of 1832, the Coleridgean programme for the national bourgeois consciousness, that all form part of the crucial historical developments of the period 1820-1840.

Footnotes Chapter 4

1. A.W. Thackray, 'Natural knowledge in cultural context, the Manchester model', American Historical Review, 1974, 79, 672-709; S. Shapin, 'The Pottery Philosophical Society, 1819-35: an examination of the cultural uses of provincial science', Science Studies, 1972, 2, 311-36; S. Shapin, 'Property, patronage and the politics of science: the founding of the Royal Society of Edinburgh', British Journal for the History of Science, 1974, 7, 1-41. See also J.B. Morrell, 'Individualism and the structure of British science in 1830', Historical Studies in the physical sciences, 1971, 3, 183-204; I. Inkster, 'Science and Society in the metropolis: a preliminary examination of the social and economic context of the Askesian Society of London, 1796-1807', Annals of Science, 1977, 34, 1-32; I. Inkster, 'Culture, Institutions and Urbanity: the Itinerant Science Lecturer in Sheffield 1790-1850', in S. Pollard and C. Holmes (eds), Essays in the economic and social history of South Yorkshire, Sheffield, 1976; J.N. Hays, 'Science in the City: The London Institution 1819-40', British Journal for the History of Science, 1974, 7, 146-62; Guy Kitteringham, 'Science in provincial society: the case of Liverpool in the early nineteenth century', Annals of Science, 1982, 39, 329-348. See also the collection of essays in I. Inkster and J.B. Morrell (eds), Metropolis and

Province: science in British culture
1780-1850, London, 1983, of which some of this chapter
 forms a contribution. See also I. Inkster,
 'Variations on a theme by Thackray: comments upon
 provincial science, culture, c. 1780-1850', British
 Society for the History of Science Newsletter, 1982,
 no. 8: 15-18; G. Foote, 'Science and its function
 in early nineteenth-century England', Osiris, 1954,
 11, 438-454.

2. M. Berman, Social change and scientific organization:
 The Royal Institution 1799-1844, London, 1978.
3. S.F. Cannon, Science in culture: the early Victorian
 period, Folkestone, 1978.
4. E.P. Thompson, 'The Peculiarities of the English', in
 his The poverty of theory, London, 1978, 35-91;
 D.C. Moore, The politics of deference, Hassocks, Sussex,
 1976; above all J.R. Vincent, The formation of the
 British Liberal Party, 2nd edn, Hassocks, Sussex, 1976.
 See also J.E. Cookson, Lord Liverpool's administration,
 Edinburgh, 1975, and G.K. Clark, Churchmen and the
 condition of England question, 1832-85, London, 1973.
5. For this idea in a different setting see D. Outram
 'The Language of Natural Power: the 'elopes' of
 Georges Cuvier', History of Science, 1978, 16, 153-178.
6. A. Hume, The learned societies and printing clubs of
 the United Kingdom, London, 1847; S. Shapin and A.
 Thackray, 'Prosopography as a research tool in history

- of science: the British scientific community 1700-1900', History of Science, 1974, 11, 1-28. Bristol does not figure prominently in R.M. Macleod, J.R. Friday and C. Gregor, The Corresponding Societies of the British Association, 1883-1929, London, 1975.
7. For the history of Bristol, some of the best general literature is J. Latimer, Annals of Bristol in the nineteenth century, Bristol, 1887, 1970 reprinted; P. McGrath and J. Cannon (eds.), Essays in Bristol and Gloucestershire history, Bristol, 1976; B. Little, The City and County of Bristol, London, 1954; H.E. Meller, Leisure and the changing city, 1870-1914, London, 1976; the various pamphlets edited by P. McGrath on the history of Bristol, published under the auspices of the Historical Association, Bristol branch. A.B. Beaven, Bristol lists: municipal and miscellaneous, Bristol, 1899; S. Hutton, Bristol and its famous associations, Bristol, 1907; V.A. Eyles, 'Scientific activities in the Bristol region in the past', in C.A. MacInnes and W.F. Whittard (eds.), Bristol and its adjoining counties, Bristol, 1955, (Eyles makes little use of the Bristol Institution); J.F. Nicholls and J. Taylor, Bristol past and present, vol I, Bristol, 1881; C. Tovey, Bristol City Library: its founders and benefactors, Bristol, 1853; D.J. Carter, 'The Social and Political Influences of the Bristol churches, 1830-1914', M.Litt thesis, University of Bristol, 1971;

- and G.W.A. Bush, Bristol and its municipal government, 1820-1851, Bristol 1976.
8. For the view that eighteenth century Bristol lacked cultural institutions, see J. Latimer, Annals of Bristol in the Eighteenth Century, Bristol, 1893, reprinted 1970, 527f, and The new Bristol guide, 1801.
 9. For this periodisation and the insights it offers on the development of a 'Liberal Cultural' Renaissance from 1870 onwards, see the work of H.E. Meller, op.cit. footnote 7.
 10. For an account of Smith's deliberately provocative remarks, and the reaction they caused in Bristol, see Alan Bell, Sydney Smith, oxford, 1980. An important part of the ideology of this new conservatism is played by what has come to be called 'Liberal Anglicanism'. While it is quite true that Liberal Anglicanism has a progressive idea of Christian providential history at its heart, and that Liberal Anglicans were interested in the sciences, it-should also be stressed (this is certainly my interpretation) that this progressive model was built into an accompanying programme of awakened and attentive conservatism, which saw itself as having nothing to fear from science or social investigation. Rather a broad spectrum of conservative feeling would be strenthened by incorporating the progressive sciences. See S.F. Cannon, op.cit. footnote 3, 1-71; and D. Forbes, The Liberal Anglican idea of history,

- Cambridge, 1952. T. Wigmore-Beddoes, yesterday's Radicals, Cambridge and London, 1971, is another helpful account.
11. W. Minchinton, 'Bristol - Metropolis of the West in the Eighteenth Century', Transactions of the Royal Historical Society, 5th series, 1954, 4, 69-89.
 12. For Bristol's nineteenth-century economic decline, B. Alford, 'The economic development of Bristol in the nineteenth century; an enigma?' in McGrath and Cannon, op.cit., (7), 252-283.
 13. For **the Corporation**, G.W.A. Bush, op.cit., (7), 17-41.
 14. Alford, op.cit., (12), 265. Two firms which did flourish and survive in the second half of the century, Wills and Frys, developed outside this 'commercial free-masonry' to form the basis of the 'Liberal Culture' of the later period.
 15. Information culled from the Tory newspaper, Felix Farley's Bristol Journal (henceforth FFBJ).
 16. FFBJ, 4 February 1809. Other notable advertised lectures included those of S.T. Coleridge, speaking on Milton at the White Lion in Broad Street, FFBJ, 9 April 1814; and John Thelwall (1764-1834) who lectured on Milton **and Shakespeare** in June 1817, one among many visits by Thelwall.
 17. In the episode where he collaborated with Francis Cheyne Bowles (d.1807), surgeon, Beddoes behaved chaotically. He had gathered together fifty pounds

to spend on anatomical lectures, from sources of the kind one might expect given the social connections he had as described in Chapter 2. These included Lords Lansdowne and Stanhope; Thomas Coutts, Esq., banker; James Watt, Jr. and Thomas Wedgwood. The lectures planned for November 1794, had Beddoes writing them on the evening they were due to be delivered, with the unfortunate Bowles waiting upon him as the appointed time came and went. When Bowles did manage to reach the waiting audience, gathered at the Red Lodge, Park Row, he could not read Beddoes' handwriting. The lectures of 1797 and 1798 given by Bowles and Richard Smith were far more successful, and it seems that the two men may have made one hundred guineas each. For this information, see The Richard Smith biographical Memoirs, vol. 4, 'Francis Cheyne Bowles', now housed in the Bristol Corporation Archives Office.

18. See FFBJ, October 5 1822. For extended discussions on the relations between evangelicism, social reform and the Church, see I. Bradley, The call to seriousness, London, 1976; E.R. Norman, Church and Society in England, 1770-1970, Oxford, 1976; and F.R. Brown, Fathers of the Victorians: the age of Wilberforce, Cambridge, 1961.
19. Despite the presence of John Kaye (1783-1853), Bishop of Bristol from 1820-1827, the activists in the

scientific activities of the city **were** invariably **the Deans**. **Bees successor was John** Lamb (1789-1850) a Whig Anglican, who was **also** Master of Corpus Christi College, Cambridge, from 1822. John Kaye was Regius Professor of Divinity at Cambridge from 1816 and an 'able, deeply conservative High Church prelate', according to R.A. Soloway in his study, Prelates and People, London, 1969, page 237.

20. No full study of these elite conversions into Anglicanism as yet exists but any such work would surely bring out the political and Oxbridge oriented aspect of these changes, and extend further our historical understanding of the 'Cambridge network' in the setting of early nineteenth century Britain.
21. Harford was actively involved in the setting up of St. David's College, Lampeter, **and was** to be one of the signatories of the Declaration of students of the natural and physical sciences of 1865, against the implications of Essays and Reviews. See W.H. Brock and R. MacLeod, 'The Scientific Declaration: Reflexions on Science and Belief in the wake of Essays and Reviews', British Journal for the History of Science, 9, (I) 1976, 39-66.
22. For the Stock case, see G. Munro Smith, A History of the Bristol Royal Infirmary, op.cit., 180-182, and the Richard Smith Biographical Memoirs, volume IX, which contains material on Stock. See **also** A. Goodwin, The Friends of Liberty, London, 1979.

23. My account of the internal history of the Bristol Institution is based on the following materials:
- the manuscript records of the BI and the 'Phil and Lit' held by the Archives Office of the Corporation of Bristol; number 32079, 1-152 (this cache of materials includes minute books, registration-of-proprietors, letter books, cash books and correspondence). Additional material on the history of the BI is held in the Jefferies Collection of Bristol Central Library, College Green, Bristol, especially in volumes I and 2, in the collections that are numbered B 26066/26065. The Central Library also holds various miscellaneous materials on the Institution as well as copies of the printed annual reports of the BI which run from 1823-1836 (B 4508-4521). There are also printed reports for the year 1846 and the year 1860, and these two sporadic publications indicate the troubled history of the Bristol Institution from 1836 onwards.
24. See the first and second annual reports of the Bristol Institution for a printed account of these and other developments in the Institution's early years. The early history of activities in Bath is outlined in V.J. Kite, Libraries in Bath 1618-1964, op cit. The first Treasurer of the Bristol Institution, H. Browne, Jeweller, went bankrupt in 1825, and had 'balances in hand' belonging to the BI, of £937-10-8.

In relation to Bath, certain analogies with Bristol bear re'-iteration; an 'organised' society more formally enacted than the eighteenth century Philosophical Society, but not a development that had a particularly powerful life; Bath was often visited by the same lecturers as Bristol, e.g. Norton Webster on the steam engine, J.G. Wood on ancient history (182) and Spurzheim on phrenology in 1827.

25. See BIASLA, 32079: at the time of researching this catalogue was still separate from the main BI archive, being housed in the Central Library Collection, 26785. I am grateful to Margaret Crump for telling me of the existence of this catalogue.
26. Andrew Hart, Catalogue of periodicals printed in Bristol 1820-1840, MS reprint, Bristol Central Library, number B 26610. See also the study by D.F. Gallop, Chapters in the History of the Provincial Newspaper Press, 1700-1855, which gives a useful account of the FFBJ and the Bristol Mercury: typescript in BCL.
27. Biographical information in G. Munro Smith, op.cit, On medical men in a different context, see Ian Inkster 'Margical men: aspects of the social role of the medical community in Sheffield 1790-1850', in J. Woodward and D. Richards (eds), Health care and popular medicine in nineteenth century England, London, 1977, 128-163. On Skinner, see H. and P. Coombs (eds), Journal of a Somerset Rector, Bath, 1971.

28. On Cockerell see D. Watkin, The life and work of C.R. Cockerell. London, 1974.
29. The quotation is from BI second annual report, page 25. Meller, op ci ., (7) page 48, suggests that
- The activities of the Institution had provided the basis for the integration of social groups within the city formerly without the means, or possibly the desire, for intercommunication. By 1861, the process had not gone all that far. But the framework for future integration among the city's upper **classes** had been laid.
30. The archive for the BI, 32079 (33-36) contains much interesting additional information on the finances of the lectures at the Institution up to the 1850s. To give some further examples: the Marquis Spineto was paid £105 for his lectures of 1826. Dr. Spurzheim received £80-3-9 as moiety and £60 as fee for his phrenology lectures in 1827, receipts for which were £231-13-6. Thus the balance to the Institution was £80-3-9. Thomas Webster's course of lectures on geology in November 1828 had receipts of £145-10, of which £75 went to the lecturer. Many of the lectures in the late 1820s and early 1830s produced very small profits or none at all, (e.g. Mr. William Salisbury's lectures on Linnean systematics in June 1830). For

his course in March 1831 on zoological and philosophical anatomy, which greatly impressed W.D. Conybeare, the physician Henry Riley sold 116 single tickets, and the fund for the purchase of fossils belonging to the late curator J.S. Miller, benefited by £93-3-5. There can be no doubt that the various lectures given for the benefit of the Institution were of some importance in bolstering a less than satisfactory financial situation. For example, the three lectures on the mummies and antiquities of Egypt, given in late March - early April 1834 by J.C. Prichard and G.T. Clark, brought in £71-0-6. W.B. Carpenter gave a course of 12 lectures on vegetable physiology in October 1837: nearly 200 people enrolled for these and £70 accrued to the Institution for the purchasing of scientific works. In October 1838, James Montgomery was greatly successful as a lecturer on poetry, selling over 450 tickets. He was paid £63 and the Institution received just over £65. Over 200 people listened to Conybeare's lecture on the landslip near Lyme Regis in March 1840, and this benefited the Institution by just over £23. Receipts from lectures during the 1840s fell away very considerably, and there were deficiencies from many courses. Balances accruing to the Institution could often be no more than £5, especially from lecturers who had done poorly in the past, of which a notable example

would be Robert Addams, whose lectures from the 1820s onwards seemed to have been expensive (their subject was experimental philosophy, chemistry and often electricity) and to have cost the Institution unlooked for losses.

31. On the BAAS, see Jack Morrell and Arnold Thackray, Gentlemen of Science: early years of the British Association for the Advancement of Science, Oxford, 1981. The size of the audience of mechanics for the special lecture by Norton Webster in 1824 was just over two hundred.
32. On Blainville, see Toby A. Appel, 'Henri de Blainville and the Animal Series: a nineteenth century chain of being', Journal of the History of Biology, 1980, 13 (2), 291-319.
33. See David Elliston Allen, The Naturalist in Britain, 1976, for a suggestive account of the moral lessons of botanical collecting, in the early Victorian period. A less accurate statement is that of Lynn Barber in The Heyday of Natural History, London, 1980.
34. See the outline of Lectures on the Powers of the Mind, March 11 - April 15th, 1836, by Lant Carpenter, in Bristol Central Library, ref IB/BR2 p6 Socs I; and R.L. Carpenter B.A. (ed), Memoirs of the Reverend Lant Carpenter, Bristol and London, 1842.
35. See J.H. Brooke, 'The natural theology of the geologists: some theological strata' in L.J. Jordanova and

- R.S. Porter (edsl, Images of the earth, 'op cit.', 39-64.
36. S. Shapin, 'History of science and its sociological reconstructiora', History of Science, 1982, 20, (3), 157-211.
37. For Cumberland's letters, part of which seemed also to impugn the geology of W.D. Conybeare and W. Phillips's Outline of the Geology of England and Wales of 1822, see FFBJ December 13, 1828, page 3. On Cumberland, see G.E. Bentley, Jr., A Bibliography of George Cumberland, New York and London, 1975.
38. Trevor Fawcett, The Rise of English Provincial Art, Oxford, 1974, especially pps,132-133 and 186-187 for Bristol. On the 'Bristol School', see the catalogue by Francis Greenacre, The Bristol School of Artists: Francis Danby and painting in Bristol 1810-1840, Bristol, City Art Gallery Catalogue, 1973.
39. For Conybeare, who awaits a full study, see F.J. North, 'Dean Conybeare, Geologist' in Transactions of the Cardiff Naturalists Society, 1933, 66, 15-68, and the bibliographical details about him in W.A.S. Sarjeant, Geologists and the history of geoloav: an international bibliography from the origins to 1978, London, 1978, vol 2, **page 756. See also** the entry by M.J.S. Rudwick in vol. 3 of the Dictionary of Scientific Biography, New York, 1971, **395-6. See also** N. F. Hulbert, Brislington Parish church, Bristol, 1952, 23-28 which gives information on Conybeare's **marriage** and small private income.

40. Letter from Conybeare to Rev, W,V, HArcouzt,
Wheldrake, York, 1831; Harcourt MSS; Phillips
volume. I owe this reference to J.B. Morrell.
41. Phillips to Harcourt, 3 Aug, 1936; Harcourt MSS,
Phillips volume.
42. See BIASLA, 32079, (1) and (2).

Chapter 5

Within the Philosophical and Literary Society, the geologist W.D. Conybeare and the ethnologist and psychiatrist J.C. Prichard were easily the most celebrated of the Society's active members. Conybeare orchestrated, especially by correspondence, the connexion with York and Cambridge savants, and worked hard for the Society, even when he moved from his lectureship at Brislington to Sully, in Glamorganshire, in 1827. Prichard, whose ethnology was based on great erudition and firm Christian commitments (while, under correct scientific principles these were not to 'interfere' with his methods) **was a** figure of great local, and considerable national and international, stature.' The 'Phil and Lit' formed an enclave within the main body of the Bristol Institution; it provided itself with a separate account of yearly proceedings within the printed reports of the Institution; it was a mouthpiece for its ambitious members, and a specialist arena for the city's more self-consciously 'philosophical' men.

Conybeare **came** to Brislington with a reputation as **one of the most active of the so-called 'Oxford School'** of geologists that included William Buckland. He had **enlarged and improved on William Phillips's compilation** of English stratigraphy, Selection of Facts of 1818 and **this formed the basis of the Outlines of 1822, co-authored** with Phillips. **Conybeare was eventually to become Dean of**

Llandaff, and was more active than the reticent **Prichard** in propagandising for the BI in its early years, and for its sister society.

A good example here is his explicit defence of the historical relations **between commerce and science**, as expounded in his 'On the Origin and **Progress** of Scientific and Literary Societies', read on December 18, 1823, and at the first evening meeting of the Society, January 5, 1824.² Conybeare **states** that 'in the earlier stages of civilization the body consecrated to the service of religion **seems** to have been also the sole depository of the scanty stores of knowledge of every kind as yet only beginning to accumulate'. The flowering of Alexandria and the Alexandrian Schools was obscured by 'the general night of the middle **ages**, in which it were vain to search for anything deserving the name of natural science'.

Conybeare then surveyed the foundation of Oxford and Cambridge; **praised Bacon** as the true founder of experimental philosophy **as well as** scientific institutions; until the foundation of the Royal Society, and (in the second half of the Lecture) proposed that 'the progress of scientific discovery is in truth very analogous to that of geographical discovery'. **He summarised** the advances **made**, under the Baconian banner, in botany, comparative anatomy, geology and chemistry there taking up some of the remarks made by Charles Daubeney). Astronomy **was noted as** being 'the eldest and most important branch of physical

inquiry'. Conybeare proposed that the study of the mechanical laws of nature would extend successfully into the examination of polar forces; another Newton might arise to add to the developments laid down by his work on 'the single principle of attraction'. The magnetic axis of the earth would be understood, and 'the golden chain of connective causes which, descending from the throne of the Deity binds all nature in indissoluble dependence and union' would be exposed. Partial views of nature blind the observer to the Divine Wisdom: the connecting totality reveals it, and to complete his case Conybeare quotes from the poet Thomas Campbell;

The very law that moulds a tear
and bids it trickle from its source
that law maintains the world a sphere
and guides the planets in their course.

Conybeare also followed the theme set by Professor Charles Daubeny in defending the fruitful relations between science and commerce, through historical time. For example, at an Institution dinner in 1825, he made the direct equation between commercial expansion on a world wide basis

('commerce becomes a principle equalising the civilisation of the globe') and the growth of scientific observation, and went on to say that 'commercial' Tyre had taught classical Greece her very letters, and that between the glories of 'commercial' Alexandria and the dark night of ignorance, there was only the saving glory of the commercial

rebuilding of Italy under the Medicis,³ Indeed 'from Florence, a native of Bristol, the Illustrious GROCYN first imported a knowledge of Grecian literature into this island'. Conybeare's grandfather had been Bishop of Bath from 1750-1755, and his brother John Josias Conybeare- was rector of Batheaston, near that city, before his death in 1824; Conybeare may well have felt a particular affinity with the South-West, and indeed with its past geologists, such as Catcott and his work on ossiferous caverns in the Mendips. He was also fully part of the Oxbridge network, having geologised with Buckland in Ireland in 1813, and receiving Adam Sedgwick as a visitor to Brislington in 1820. Vernon Harcourt also visited Conybeare at Brislington. Conybeare was friendly with H.T. de la Beche (1796-1855) who played a small part in the early history of the 'Phil and Lit' (much smaller than, for example, is stated in the Dictionary of National Biography), and de la Beche gave a paper to the Society in May 1825 on 'The Diluvium of Jamaica'. In good Bristol fashion, de la Beche was at the time in transit, from being a slave owner to becoming a scientist.⁴

Conybeare was not only of importance as a spokesman and a contact. **His work as a geologist was one of the most sustained** and impressive products of the 'directionalist' geology of the 1820s and 1830s; anti-Lyellian, mildly catastrophist, with life **forms progressing in a series of 'steps'** that **were separate**, although correlated with major

changes in the structure of the earth, His work on the has of Lyme Regis did much to supplement such a scheme, as Conybeare showed how extinctgiant marine reptiles, such as plesiosaurus, were intermediate in organisation between living reptiles and the fossil ichthyosaurus, of which Conybeare donated an example to the Museum of the Institution. The pedagogic point that he stressed when speaking on such matters was that this was not evidence at all for Lamarckian transmutation: the linked series involved separate creation by divine authority which nevertheless contributed to a scale of nature. Furthermore, there was no evidence at all that the fossil record showed early types within the sequence of creations to be inferior in organisation to later ones; transmutation was not a plausible account of either the development of life forms or the internal structure of animals themselves.⁵

Conybeare was also a subtle critic of Lyell's anti-progressionist geology, spelling out his doubts at the BAAS meeting of 1832 and in correspondence with Lyell in 1841.⁶ Part of the dispute with Lyell that needs stressing is that Lyell's curious system undermined the historical dimension to geological science: history itself, based on progress and discrete creations, was part of the movement of God. And the view that Conybeare followed Cuvier in a straight forward way is incorrect: he was closer to Blainville, with an emphasis on a chain of independently created organisms. Cuvier's catastrophism

had to be modified.

Even when he **was no** longer resident in the vicinity of Bristol, W.D. Conybeare continued to support the activities of the Bristol Institution and its 'Phil and Lit' Society. For example, the landslips of Lyme Regis gave him cause to lecture at the 'Phil and Lit' in April 1825, but also brought him back to lecture at the Institution proper in March 1840, to a substantial audience. The ethnologist James Cowles Prichard **was less** assertive **as a BI** and 'Phil and Lit' member: but his status was very considerable.

The political differences between Conybeare and Prichard - the one a robust Whig, the other a personally retiring Tory - were not as important as their common scientific commitments. Prichard voted Tory or for the more conservative candidates wherever he could; and identified himself completely with conservative activities in science and social life. The achievement of his ethnology is conventionally discussed as part of the history of anthropology, particularly in terms of the monogenist/polygenist debate, and with an eye to J.F. Blumenbach's revision of Chain of **Being** concepts and the possible implications of this in **other areas** of the life **sciences** and, indeed, social policy? This perspective on Prichard is fruitful, since it rescues the ethnology from a purely intellectual discussion of its internal varieties, and brings out the activist, interventionist side - the

prescriptive side - of his work, as well as recognising its unusual intellectual range and diversity of materials.

Prichard had, after all, produced a complete explanatory framework for the history of the 'civilising **process**', and for the movement of mankind, as a single **species**, from a primitive black form, towards the white heights of decorum embodied in the evangelical Anglican **conservatism** that he constantly defended. As other writers have pointed out, Prichard's early work contains **some** startling propositions; that Divine Revelation had been accorded, in a pure form, to 'primitive' man and, more startlingly (although only in early editions of his Researches) that primitive **man was** undoubtedly black, or of dark hue. It is a matter of debate how these two proposals sit alongside one another, and one simple solution is to take the view that Prichard saw Adam as black, with the original purity of his Revelation subsequently dispersed and corrupted, as described in the early chapters of the 'Sacred Narrative'. It is also the case, as Stocking and Bynum have shown, that this original hypothesis is dropped as the Researches expands into the editions of 1826 and the five volume third edition of 1836-1847.⁸ Prichard's view of true religion might be argued to be that of a degenerationist, i.e. that the purity of original revelation has been corrupted; it is also important to propose that his theory requires a culture to keep up a commitment to the possibility of staying in touch with the

closest remaining examples of original revelation - a historical account of which is provided by the Bible - if such a culture can in any sense be deemed 'civilised'. Religions that tended, for example, toward polytheism and animal worship, especially that of the Egyptians were to be examined as examples of degeneracy. Prichard discussed the ornate infidelities of Egypt in his learned Analysis of the Egyptian Mythology of 1819; he also discussed the nature of mummies in a paper to the 'Phil and Lit' in January 1825. But again, the pedagogical point was to indicate the degree to which the Egyptians had dwelt in darkness, as compared to the Christian revelation. A civilised culture would have to be Christian, and have to actively be so, if any approximation to true faith were to be maintained.⁹ Prichard had also developed a powerful theory to explain whiteness in certain parts of the human species - that it was a result of sexual selection, domestication and the advance of civilised social forms, and in a very particular sense, an index of civilisation itself. This did not condemn non-white people; rather, his whole ethnology necessitated that non-whites be rescued, and brought to the true faith in an active, paternalistic way. It would follow from his monogenist position that no part of the human family was lost, on biological grounds (such as that of being a distinct 'species') to the arts of Christian rescue: Prichard's own life, as a physician, supporter of philanthropy and as an ethnologist, attempted

to follow this Idea of moral conduct, by example. The activities of science and of charity, and the existence of milieu such as the Bristol Institution, were in themselves examples of the vigilant moral mission that a 'correct' history of civilisation demanded. In terms of the history of anthropology and the history of science, Prichard's most influential paper given in Bristol was probably that of 1824 'On the Distribution of Plants and Animals'. It was influential in the development of zoogeography and (however ironically) within evolutionary theory, being made use of by Lyell and Darwin. 10 As a social ideologist, employing analogies of domestication and sexual selection, his work was the scientific proof for the unity of the human family, but the accompanying degradation of contemporary non-Christian peoples, both abroad and in the metropolis. Prichard's appearances at the 'Phil and Lit' indicate that he used the society as an arena for the presentation of his current thinking: his position as Pro-Director was also his own stamp of approval on the form of social relations - exclusive, Christian and hierarchical - that (beneath the agreed determination to be non-political and non-controversial) the Institution embodied.

The BI and its 'Phil and Lit' provided the Bristol middle (upper) class with an arena for a Christian conservative science that transcended denominational differences. The

museum of the BI for example had various exhibits that contributed to this framework of a 'progressive' creationist philosophy, including a gift from Buckland **and Conybeare of bones from the Kirkdale cave; a series** of rocks collected at Freiberg by Richard Bright (senior) **under the supervision of Werner himself, and an extensive** collection of British birds, together with the ichthyosaur. Bristol, with its art exhibitions and reading-room, had at last answered the cultural challenge laid down by that model of the cultural merchant, William Roscoe of Liverpool. The Institution's members awaited the arrival of the British Association in 1836 with bated but confident breath.

But the Bristol Institution was not the only example of scientific culture in the city in the years 1820-1860. The local Mechanics Institute, founded in June 1825, was designed to extend the hierarchic imagery of nature and educational progress into the city's petit-bourgeoisie. Its financial base was similar to that of the BI, and derived from the same individuals who started the 'higher' institution. One slight difference between the two was that Unitarians tended to deliver a higher proportion of the lectures at the Mechanics Institute. But, despite this, Stephen Cave (1764-1838) a Tory Anglican banker was treasurer, and Conybeare vice-president,¹² Subscribers were warned that the Institute needed to set a good example, to assuage the doubts accompanying the Mechanics Institute

movement in some quarters, Charles Pinney U.793-1867), West Indian merchant, Anglican, mayor of Bristol at the time of the riots of 1831, and activist in the paternalistic General Trades Association and the Lord's Day Observance Society, as well as the Bristol Institution, stated at a MI meeting in November 1825 that

..9 the high marks towards which their talents were to be directed was to trace the footsteps of the omniscient Creator throughout all Nature in this way they would disarm the objections of their opponents and allure them to become promoters of that Institution which can thus make them better men and better citizens ... 13

The MI had enrolled about 280 members by the end of 1825 and developed a small elementary school which taught mathematics. It tottered along until the early 1840s, with donations of books from such figures as H.H. Wilson (1786-1860), Professor of Sanscrit at Oxford; Samuel Lee (1783-1852), who received a stall at Bristol Cathedral in 1831, became vicar of Banwell in the Mendips, site of a famous bone cave, and then Professor of Arabic at Oxford in that same year; and J.A. Cramer (1793-1848), Thomas Arnold's successor as Regius Professor of Modern History at Oxford from 1842. It is not surprising that the 'mechanics' of Bristol did not find gifts from such abstruse sources of immediate delight. The MI continued with its reading

room and library, and lectures from a variety of figures **such as the Chevalier Mascarenhas , the Portuguese Consul,** in 1837; a 'Mr. Cantor', described **as a 'learned** foreigner' lectured on anthropology, and, in October 1844, **'Dr. Owens, M.R.C.S. and Mr. W.J. Vernon of London'** lectured on mesmerism. But this typical example of an unsuccessful educative institution disappeared in an amalgamation with the Clergy Book Society in 1845 to form the Bristol Athenaeum. 14

The Athenaeum was in fact the home already adopted by yet another scientific society with a more noticeable utilitarian orientation, the little known 'Society of Enquirers'.¹⁵ This began in 1823, almost in defiance of the BI, and met weekly in the Masonic Hall, in Broad Street. Lectures were given by local men almost exclusively, although contacts were made with the metropolis in the form of the Meteorological Society of London. The activities of the society were sympathetically covered by the Liberal Bristol Mercury, and its two chief activists were the chemist and botanist Samuel Rootsey, FLS, (1788-1855) and the philosophical chemist William Herapath (1796-1868). Both these men found the BI 'exclusive'; and Herapath in 1828 accused the Institution of 'entertaining science, not of promoting it'. And when **a member** of the Enquirers argued that no expense be spared in the propagation of religion - science, he said, **was less** important - the committee forced his resignation.¹⁶ Herapath **was a** well known local

radical, active in the Bristol Political Union In the Reform period; and he and Rootsey (who had at times been imprisoned for debt) raised the issue of the chemical state of the river Frome, effectively an open sewer in the city centre. Interestingly, both Herapath and Rootsey came to hold positions in the Bristol Medical School (1832), Herapath as lecturer in chemical toxicology (1832-1867) and Rootsey as botanical lecturer (1832-1854). Nonetheless, the lectures given at the Society of Enquirers, when on natural history (such as those of James Prowse, in February 1827) were manifestly Christian and abounded with references to God's Providence. When on the natural history of man, the lectures were avowedly imitative of Prichardian ethnology. The Society was a small informal gathering of scientifically minded petit-bourgeois. And all the familiar cultural arguments for the existence of scientific institutions as important diversions from a wasted life of sensuality and materialism were restated, even in this much smaller and less elitist setting. For example, in March 1837, the report of the Society contained the following statement: that the existence of the Society proves

even in periods of distress such as the present,
the people ... have not resorted to acts of
violence or insubordination but have borne
their sufferings with firmness and resignation,
proving more forcibly than a thousand arguments,

the great advantages of Education in leading men to reflect on their best interests and to perceive and adopt that mode of conduct which is most likely to obtain them; thus converting him from **a rude, senseless** and turbulent savage into a social, intelligent and peaceable citizen.¹⁷

The chemists mentioned above provided the Utilitarian edge in the activities of this small Society, but it cannot be concluded from, say, the individual politics of William Herapath that the lectures at the Enquirers tended in general towards any coherent alternative and more materialist science.

No extended popular scientific culture can be traced in Bristol in the years up to mid-century. Even the most likely candidate for the dispersal of popular and accessible views on nature's laws and their workings - phrenology - did not appear as an organised movement. Mr. G. Burgess and Mr. Joseph Marriott did advertise for the reading of heads in the Arcade around 1840, and the question of phrenology intermittently appeared in some of the lectures at the Society of Enquirers. But when the American elocutionist Jonathan Barber came to lecture on phrenology to substantial audiences in November and December 1841, he was at pains to stress in these lectures that phrenology was in harmony with the objects of Christianity; indeed, the promotion of the ends of Christianity was manifested by the existence of an organ of 'marvellousness'. It is certainly of interest

and may even be typical of Bristol that this same American visitor engaged in a debate with one John Brindley, a native of Chester, on phrenology, in 1842. Despite his Christian protestations regarding the science, he was to be challenged on grounds of possible materialism and poor scientific evidence, on the lines discussed by historians of phrenology.¹⁸ The same John Brindley also engaged in a well attended debate with Robert Owen in December 1840. The attendance at this meeting, according to the Bristol Mercury was enormous, possibly as much as 4,000 persons and held at Ryan's Circus in Bristol. Brindley was assisted in his attack on the socialistic arguments of Robert Owen by two of the most active members of the committee of the Bristol Institution: J.S. Harford and Charles Pinney. Brindley could almost be thought of as a spokesman, within these briefly popular contests, for the views of the established civic figures who orchestrated cultural and philanthropic activities that have been described elsewhere.

It is not easy to make simple analogies between scientific arguments and political positions, and the case of the Bristol Institution suggests that men of differing political habits might agree on common scientific propositions. With the same reservation, when pondering the relative paucity of large-scale interest in popular science in this particular provincial setting, it is worth adding that Chartism in Bristol was noticeably weaker as a

movement than elsewhere in England, and especially South Wales.¹⁹ For reasons that may again be to do with the relationship between industrialisation and culture, both popular science and popular politics in this West Country capital were relatively peaceful after the reform period of the 1830s.

It is also hard to generalise from the contradictory evidence of individual examples. In Bristol, the local Owenite 'hall of science' became a meeting place for the Liberal party from 1843. Or again, the phrenologist Joseph Marriott was trained as a lawyer, and then turned to dissenting religion and popular science. 'Fringe' interests such as mesmerism were quite often followed by aristocratic figures as well as by members of the middle class: this was particularly true in the Bristol vicinity with the case of the second Earl of Ducie (1802-1853). The only worthwhile historical generalisation that could be said to hold in the Bristol example was that the culture of science was relatively esoteric as a pursuit and at almost all points of the social spectrum where it did impinge, had a marked Christian and orthodox tone.

Developing a little earlier, as a 'career in science' and predating that of the **chemists** in the Medical School - (of which more will be said in chapter 6). - was the post **of Museum** curator. The first curator at the Bristol Institution **was an emigre' from Danzig**, who had intended to

make for America to lead a life in commerce one J.S. Muller (Miller). 20

Miller lost his family legacy when Danzig was overrun by the French, and was forced (after missing his boat to America) to settle in Bristol and follow other pursuits. An interest in entomology had brought him to the attention of W.E. Leach at the British Museum, and Miller was encouraged to continue with work on the crinoides. The geologist Conybeare helped prepare a monograph on this subject for the press, and it appeared, as A natural history of the Crinoidea in 1821. Miller became curator at the Institution from 1823 at a salary of £150. He worked very long hours at the Institution, especially in the cataloguing of 'gifts', and also lectured to the 'Phil and Lit', on subjects such as the Irish elk, or after visiting the bone cave at Banwell. His work was acknowledged by Blumenbach, Cuvier, Latreille and D'Aubigny', he also helped Buckland in the arrangement of organic remains held at the Ashmolean Museum, Oxford. At his death, his own fossil collection was purchased by the BI, at a cost of £730, thereby also providing his widow with a pension.²¹ Miller had an interesting scientific network of his own, including contacts with William Baker of Bridgewater and Mr. Adye, a surgeon in Bradford, Wilts, who had fine specimens of pear encrinites; Miller purchased this collection for the BI. In that same year, 1829-1830, Miller's salary was up, to £180 per annum. But his workload

at the BI museum meant that Miller never completed a project on fossilised corals, and, eventually, his health broke down. Miller felt gripped by the 'thousand **arms**' of the crinoidea and the chore of showing visitors around the museum: he died on May 25 1830. A mystery surrounded the whereabouts of his manuscripts on the fossil corallines.

Miller's eventual successor, Samuel Stutchbury (1798-1859) **widened the network of scientific contacts. He had worked at the Museum of the College of Surgeons, travelled in the Pacific as a naturalist, and became well known in Bristol for his activities in the museum of the Institution and for his coalfield surveys. Stutchbury also developed contacts - as had Miller - with oxford, through P.B. Duncan (1772-1863) a scientific activist in Bath as well as keeper of the Ashmolean Museum. Stutchbury attended Sir Charles Lyell at the inquiry into the Haswell Colliery explosion in 1844; extended the BI museum specimens in the lecture courses on comparative zoology, and eventually returned to Australia in 1850 to undertake a survey of New South Wales. His assistance with the Museum specimens was of importance to the Paris trained physician Henry Riley, who was able to give a series of lectures on comparative anatomy and zoology that had distinct traces of the French 'transcendental' anatomic method: perhaps some of the first of their kind in provincial England.**²²

The career of museum curator received Its ultimate metropolitan accolade - state support - when Robert

Etheridge, curator at the BI from 1851 to 1856, became one of the curators at the Museum of Practical Geology in London. 23 The new interest of the state in scientific affairs was also obvious in the career of the Bristol geologist William Sanders (1799-1875), whom H.T. de la Beche recruited to supply information on Bristol for the report by the Health of Towns commission in 1844-45; de la Beche could be said to be recruiting from an old source to provide 'expert' information for his career as a professional scientist and government official. William Sanders looked after the BI museums at various times in its history and was known as a skilful map-maker of Bristol and its geological environs.

The visit of the British Association to Bristol in 1836 was a crux in the history of institutional science in the city, since it was a welcome at of recognition for a non-university town. 24 The BI had been badly in debt from 1833 onwards, but the BAAS visit was, from the Institution's point of view, a success. The 'lions of science' arrived, and large audiences attended the various events, not least the battle between Murchison and Sedgwick, and de la Beche, over the geology of the Devonian system. Tours to the 'great commercial sights' of the city were arranged, and visitors gazed at the piers of the proposed Clifton suspension bridge. The bridge in fact remained non-existent until 1864, when, oddly, the BAAS was visiting Bath. In a nice twist of metropolitan/provincial relations, the Clifton bridge was eventually finished by

using discarded parts from London's Hungerford Bridge.²⁵

After the BAAS visit, the Institution relapsed into small but chronic debts, and the printed annual reports ceased: no printed report appeared for a decade. The only utilitarian project launched by the BI, the keeping of tidal readings, petered out after two years. Not even a visit to the 'Phil and Lit' by the project's instigator, William Whewell, in July 1838, could sustain the efforts of his local tide-reading agent, the surveyor T.G. Bunt.

Likewise, the only magazine to have been generated by the BI activists, The West of England Journal of Science and Literature, numbers 1-5, of 1835/1836, perished.²⁶ Even so, this collection is illustrative of Bristolian concerns, and must have reached a moderate readership among the literate bourgeoisie of the West of England, in Bristol, Bath, Exeter and Cardiff.

Articles of particular interest include: Essay on Geology by Rev. W.D. Conybeare: On the Formation and Growth of Coral Reefs and Islands, by S. Stutchbury; On the Relations between Mind and Muscle, by Dr. J.A. Symonds; On certain Objections to the Hypothesis which supposes the Central Mass of the Globe to be in a state of

<u>Igneous</u>	<u>Fusion</u> ,	also	by W.D.	Conybeare;	a review	of
<u>Elemens</u>	<u>de Zoologie</u> ,	etc.	by M.H.	Milne-Edwards;	and also	

of part I of R.E. Grant's Outlines of Comparative Anatomy of 1835; a short description of the visit by Louis Agassiz to the **Museum of** the Institution where he had examined thirty

species of fossil fish, many of them from the carboniferous limestone, in the autumn of 1834. Agassiz made use of some part of the Bristol collection in his work on fossil fish.

Conybeare, in his geology contribution, provided a summary of various geological questions of the moment, stressing the lack of threat to human dignity resulting from geological inquiry, and developing some of his doubts about the uniformitarian principles of Sir Charles Lyell. In attempting to assuage religious doubters, he quoted an extract on geology from 'that most excellent journal, The Christian Observer' for May-July 1834. Likewise, an anonymous essay, 'An Introduction to Zoology' gave high praise to the Bridgewater Treatise of Dr. P.M. Roget. The importance of the reviews of Grant's Comparative Anatomy, and Milne-Edwards' Eléments de Zoologie will be discussed in chapter 7.

In its literature section, the Journal contains an essay on the writings of Hesiod by the late Rev. J.J. Conybeare; an ethnographical memoir of the Slavonic nations by J.C. Prichard; an essay towards a grammar of the Berber language by F.W. Newman; and an introductory essay to the archeology of the West of England, probably by G.T. Clark.

The 1836 visit by the BAAS helped to generate one other 'scientific' development in Bristol; the growth of a local statistical society. 27 Organised by members of the ailing institution, the statistical activists

Included the historian Henry Hallam (1777-1859) who had family connections with nearby Clevedon Court, Somerset; the conservative Anglicans J.C. Prichard, J.M. Gutch, and the Rev. J.E. Bromby; the merchant and American Consul Harman Visger (1802-1867), the attorney George Bengough (1793-1856) and the society's chief activist, the Anglican soap manufacturer, Charles Bowles Fripp (1806-1849). The Unitarian minister Lant Carpenter participated, as did the physician J.A. Symonds. Taking the membership of this (short-lived) society as a whole, it again represented the Bristol mixture of Anglican domination without exclusion of other elite religious persuasions. The purpose was simple: to send an agent from the Central Society of Education through the districts of Temple, St. Michael, and St. James to count heads, tabulate occupations, religious commitment and extent of life insurance.

The reports of the Society spell out once again what might be called the moral sociology, based on Christian patriarchy and the idea of the parochial community underlying it, which has been discussed in relation to scientific activities in general. If left to their own devices, and indeed if left unknown to the statistician, the Bristol poor would become victims of undesirable intrusions:

This subject may be presented in two points of view. To speak politically, there are few persons but, since the French revolution are

aware of the formidable power of Sansculottism
a power overlooked and almost forgotten in
periods of tranquility, but which nevertheless exists in its miserable abode, and is
ready, at any season of public weakness and
agitation, to sally forth to its work of
destruction - a power, indeed, so formidable
as to give rise to the opinion that many
imperfections in the government and laws of the
country, and in the mode of administering them,
ought to be endured, rather than run the risk
of disturbing the slumbers of a monster whose
waking hours are spent in such fantastic
atrocities. At the same time it is admitted
that this power is not always the same. Our
own country has witnessed mighty revolutions,
which have, nevertheless, been unstained by
those heart-sickening horrors which signalled
the national bouleversement in France. The
question then arises, what are the influences
that increase or diminish the sanguinary character
of this occult power, or its capacity to do evil?
May not remedies be applied which shall go far to
extinguish its existence which shall place
therefore a man's liberties, and his honest title
to the social comforts he enjoys, on a much more

stable foundation and which shall render practicable an amelioration of our statutes which the present state of things utterly precludes? In the solution of this question, the facts collected by the Statistical Society will not be without their use.

Or again:

Or we may put the matter thus. We know, on good authority, that the poor we have always with us; and when we will, we may do them good. Now, in a simple state of society, a man may know tolerably well what his duties to the poor are. When the wealthier individual resides in the midst of his own dependents, and when the requisites of civilized life are produced and fabricated within a comparatively limited district, (say a patriarchal household), the ordinary visitations of Providence are easily known, and as easily mitigated. The orphan, the widow, and the unfortunate, obtain a ready relief at the hands of a benevolent master or richer neighbour. To which may be added, that in such a state of society, the reciprocal services of every member of the community, produce an interchange of courtesy as well as of information, which subserves the purpose

of an intellectual and moral education. A general medium of knowledge is diffused, and a general tone of elevated sentiment obtains. But what shall be said of that artificial and complicated state of things when a nation manufactures for half the world - when the consequence unavoidably is, the enormous distance between the labourer, and his virtual and subdivided employer - when a person at the Antipodes may feel his garment pleasant to his back, while yet the man to whom some portion of his gratitude is due, may be pining with sickness at the distance of 12,000 miles - and when, finally, the lowest orders of society are crowded together in the same locality, and are removed from the benefits which a more immediate intercourse with their superiors would ensure?²⁸

Charles Bowles Fripp, who had presented statistical information on Bristol to the 1836 BAAS, also produced a later report on the state of the Bristol working classes. Fripp's work gave an interesting picture of what one would have to call a strikingly literate working class, over half of whom, according to Fripp, could read and write, and well over three quarters of whom could read. This would give added weight to the view that during the reform

period of the 1830s and the wide range of pamphleteering and newspaper pirating that was taking place, much of this was being received by a very literate audience. Fripp himself, as a Liberal, took the familiar line that literacy would undermine rather than promote the possibility of mass popular radicalism. And of course, from the point of view of the Statistical Society, social investigation was explicitly conservative. Annual reports gave details on police returns, types of crime committed annually and on attendance at Sunday schools. The reports are a useful insight into the social structure of the city in the late 1830s, even though the Society itself folded in 1842. It had at least associated itself with the national statistical movement in general, with which Hallam, its chairman, was of course firmly associated.

It has been argued that the institutional forms financed by Bristol's commercial elite were imitative of examples from other cities and educational institutions, particularly Oxford and Cambridge. It has been further suggested that relatively minor differences between elite religious affiliations could be set aside in the interests of institutional advances of this kind. This certainly holds for the establishment, in 1830 of a 'non-denominational' educational establishment in Bristol, known as Bristol College. This lasted the pattern of temporary usefulness becomes very striking - until 1841 and its

activist core overlapped with that of the Bristol Institution, with certain exceptions. The Unitarian minister Lant Carpenter **was not** involved, partly **because** of his religion but chiefly **because he** already ran his own educational establishment; 29 it is also very much to the point that Carpenter's **son**, the future physiologist W.B. Carpenter (1813-1885) was on the staff of the College. There were certainly disputes in the press about the exact religious composition of the College, but for the Tory Journal, for example, the College was to form part of the 'progressive' conservatism that had already manifested itself in the appearance of the Institution and the building of new churches. It would be wrong to see Bristol College as a 'godless college' that fell victim to the religious objections of the influential evangelical T.T. Biddulph (1763-1838), and of two Bishops of Bristol, Robert Gray (1762-1834) and James Henry Monk (1748-1856). These men had their doubts: but it was absolutely in keeping with the conduct of Bristol's ambitious social elite that the physician Andrew Carrick, at the College's opening, should praise Lord Brougham, while in the same group of proprietors (though not present), with the same intention of using the College as an educational avenue for his sons, should be the Tory J.C. Prichard, who did not even approve the arrival of London University. 30

The College curriculum embodied precisely the Oxbridge mixture of classics and mathematics, with linguistic and theological accompaniments, that dominated the established educational institutions of the time. The objections of Bishop Gray (which were mild) and of Monk (famous for his extreme and idiosyncratic conservatism) should not lead one to assume the presence of a centre of utilitarian, Benthamite godlessness.³¹ The purpose was to replicate Winchester, Eton and Westminster, and shepherd the sons of the College proprietors into Oxford and Cambridge. W.D. Conybeare acted as College examiner, and the staff included J.H. Jerrard, late lecturer in classics and Fellow of Gonville and Caius College, Cambridge; W.B. Carpenter; and F.W. Newman (1805-1897) tutor in classics and brother of J.H. Newman. Success attended most of the sons who entered the College, such as the Prichards, or those of the Anglican lawyer S.S. Wayte, but undoubtedly the most famous pupil to emerge from it was the future economist Walter Bagehot.³²

W.D. Conybeare prepared an Address for the opening of the College which indicated the nature of the curriculum. He divided the work into an outline of the application of classical and scientific education to theology; then examined the evidences of natural theology 'as deduced from a regular course of science', in dynamics; astronomy; geology; the history of light, heat and of electricity;

from acoustics, animal physiology, entomology, and vegetable physiology. Conybeare **made use of writers as diverse** as Pye Smith, Prichard, Kirby **and Spence on** entomology, **and of course** Paley. In part three of the Address he discussed various **aspects of** Christian revelation, including the Christian mysteries (making use for example of Dr. Olinthus Gregory on animal chemistry), before finishing with a discussion of the alienation of **man's moral** condition and the corruption of human nature. These mysteries and corruptions can only be conquered with an admission of evil and the acknowledgement of Christianity, without whose guide (he here quoted Bishop Sumner on the Internal evidence of Christianity) man is lost for ever.

The demise of Bristol College in 1841 occurred in a year when the Bristol Institution was also doing badly.

(In 1836, in a way that Trollope would have found historically important, the see of Bristol had amalgamated with Gloucester). Debts at the BI in 1837 amounted to £1,410 and they remained at over £500 throughout the 1840s. Membership fell from 223 in 1846 to 142 in 1860. Various enforced 'democratisations', especially in opening the **museum to** a wider public, did lead to **a series of** 'popular' lectures, but also to increased costs. The most influential **of these public lecturers was W.B. Carpenter, and he was the** chief beneficiary of the Internal re-arrangements of the BI.³⁴ Carpenter's lectures - for example on zoology - went towards forming the subject matter of his later textbooks

on physiology, and allowed Carpenter to prepare for his move to University College London. But attempts to rescue the Bristol Institution by other methods were not successful: a proposed amalgamation with a newly formed Society of Arts, in 1852, came to nothing.³⁵

In 1857, at the annual general meeting of the BI, one of its veteran proprietors, John Naish **Sanders**, gave the following reasons for the BI's state: the death during thirty years of many of its 'zealous founders' while many of the inheritors of their wealth had discontinued their annual subscriptions; the unlimited admission of non-subscribers to the Institution' **s museum**, which had been expensive; that (despite the railway) many proprietors claimed that they lived too far from Park Street to make the journey and could anyway read accounts of the Institution's activities in the newspapers. Sanders pointed out that hopes were not entirely dashed since benevolent and liberal persons had raised nearly £100 ,000 for the orphanage scheme organised by Mr. Muller at Ashley Down. He was over optimistic, particularly in the light of the fact that it **seems** that the younger generation preferred the Bristol Athenaeum, with its ticker tape machine to the conservative stuffiness of the Bristol Institution.

This period of 'slack' in the cultural activity of Bristol was compensated for by the medical profession. With the opening of the Bristol General Hospital in 1832, along with the Bristol Medical School, the founding of the

Bristol branch of the Provincial Medical and Surgical Association in 1840, medical men became dominant in local scientific life. Two figures in particular, Henry Riley (1797-1848) and J.A. Symonds, both physicians, figured prominently in the activities of the ailing Institution. Having failed to achieve professorial status at the 'Phil and Lit', Prichard proposed the foundation of a 'medical university' in Bristol in 1840.³⁶ But the relative independence of the medical community in Bristol is emphasised by the fact that Bristol College and the medical school did not amalgamate at this time. In a review of the history of the BI from 1851 to 1861, Symonds noted the increased presence of the medical profession among those who gave lectures.³⁷ But the inroad made into the 'Phil and Lit' by the medical men was a shared one: the meetings of the society were also used by a group of local naturalists, some of whom, such as the botanist G.H.K. Thwaites (1811-1882) also worked in the medical school, and it was this group that formed the centre of the Bristol Naturalists Society in 1861.³⁸ The development of specialised coteries of interested individuals (with overlaps) was completed by the founding of the Bristol Microscopical Society in 1843. Members included Thwaites, W.B. Carpenter, the eye surgeon J.B. Estlin and William Budd.³⁹ Certainly the scientific initiative had moved to the medical men of the city, out of the decayed form of the Bristol Institution.

In this period of 'lapse', between 1840 and 1860,

other forms of cultural activity did not cease, but were pursued in a fragmented context: for instance, there were visits from the National Association for the Promotion of Social Science, and the Archaeological Institute (1851), occurring alongside the modified culture of the doctors and the naturalists. Mary Carpenter conducted her social rescuing from Prichard's old residence, the Red Lodge. The arrival of the railway, the reorganisation of the Corporation, the reform of the Corporation of the Poor in the 1850s - these among others were indices of local alterations in the mid-century. With the establishment of Clifton College in 1860, and the amalgamation of the Bristol Institution and the Bristol Library, completed in 1871, the 'Liberal Culture' had fully arrived. Samuel Morley was one of Bristol's Liberal MPs, and the Liberal families of Wills and Fry became synonymous with the financing of cultural and educational institutions.

Perhaps commerce and science were not natural partners over long periods. The changes in the structure of poor relief, and in the ecclesiastical status of Bristol itself can reasonably be taken as a dividing point in the provincial history of nineteenth century Bristol, with the activities described in this chapter very much part of the 'pre-Liberal' period up to mid-century, with the continual emphasis on Christian activity in public and private life. One other possibility, which will be discussed later, is to place less emphasis on the division between the earlier and later periods, and to argue instead that the liberal culture that

followed *from* about 1850 did so relatively easily from its predecessor, and that certain individual careers, particularly those of W.B. Carpenter and Walter Bagehot, displayed this.

Despite its institutional transience, all the more evident when one compares the history of the BI with that of the Leeds Philosophical and Literary Society, the culture of Bristol in these years remains of interest.⁴⁰ For Bristol had made an ideological connection with the established culture of Oxford and Cambridge, and done so through the mediating influence of science and scientific contacts. An urban, commercial elite, embarrassed by charges of philistinism, had developed a polite culture where natural theology, statistical research and the enforcement of Christian accounts of history, ethnology and geology became a common language. The scientific foundation of this design were the common origins of men and the intricate handiwork of the heavens. And this 'structure of feeling' reflected the particular social preponderance of charities, philanthropic activities and exclusive government in the city's other institutions. The 'Liberal Culture' of the post 1860 period displayed differences of a real kind: the changes in the city's size, in its political (and Poor Law) arrangements, and the passing away of the closed commercial circle that had financed the BI. The last printed report of the Institution in 1861 had none of the size and scope represented in those of the mid-1830s. But as

historians have noted in other **areas of** Victorian life, the Movement towards a 'Liberal' culture may be more apparent than real. Just **as Peel** broke one kind of Toryism to allow it to reappear as 'Liberalism', so too the intellectual community broke with certain kinds of religious literalisms to keep conservative 'progressivism' alive. William Benjamin Carpenter absorbed Darwinism without difficulty. 'Evolution' itself could promote a fiercer, rather than a modified, scientific racism, as it did in the **case** of the Bristol medical man and physical anthropologist John Beddoe (1826-1911).

However slight the impact of its early nineteenth century scientific institutions, Bristol mimicked and thereby attached itself to the 'progressive' culture of non-industrial England, and its elite had made their contribution to the scientific dimensions of Victorian conservatism. The culture of imitation, that stretched from Cambridge, through certain London societies, certainly through Oxford, now added Bristol to its constituency. A commercial city, from eighteenth century roots, had bred a conservative and unusually exclusive addition to Christian scientific institutions. A municipal elite that had briefly produced a statistical society to investigate (inter alia) religious education had revealed extensive Wesleyan Methodist and Independent affiliations within the working class. The culture of science and the **arts** was not connected to that

section of the population; it was the preserve of the Anglican and Unitarian elite whose separation from the poorer parts of the city was literally topographical: away from the river, away from the flat Eastern marshy areas, and establishing its vantage point from the streets leading up the hill from St. Augustine's, to the parish of St. Michael, and thence into Clifton, and beyond.

Footnotes to Chapter 5

1. On Prichard, **see** G.N. Stocking, Jr. 'From Chronology to Ethnology: **James** Cowles Prichard and British Anthropology, 1800-1850', in Prichard's Researches into the Physical History of Man, London, 1813, edited by G.W. Stocking, Chicago, 1973, pps. ix-cx; W.F. Bynum, 'Time's Noblest Offspring', unpublished Ph.D. dissertation, University of Cambridge, 1974; Gay Weber, 'Science and Society in nineteenth century anthropology', History of Science, 1974, 12, 260-283.
2. In the early years of the **BI**, **some** of the papers given were transcribed in longhand into appropriate volumes; this is the **case** with this lecture of Conybeare's: see BIASLA 32079 (145).
3. See FFBJ, March 5 1825, page 3. For a useful, if incomplete, account of Conybeare and Bristol, see F.J. North, 'W.D. Conybeare, his geological contemporaries and Bristol associations,' Proc.Bristol Naturalists Society, 1956, 29, (2). 133-146.
4. **See** Paul J. McCartney, Henry de la Beche: observations on an observer, Cardiff, 1977.
5. **See** P.J. Bowler, Fossils and Progress, New York, 1976
6. W.D. Conybeare, 'Report on the Progress, Actual State and Ulterior Prospects of Geological Science', in Report of the BAAS 1831-2 (18331, 365-414; M.J.S. Rudwick, 'A critique of uniformitarian geology; a letter from W.D. Conybeare to Charles Lyell, 1841', Proceedings of the American Philosophical Society,

1967, 111, 272,-287.

7. A helpful **summary of this cluster of arguments is**
W.F. Bynum, 'The Great Chain of Being after forty years',
History of Science, 1975, 13, 1-28.
8. See Stocking's introduction op.cit., (1) and Bynum
'Time's Noblest Offspring', chapters 3-6.
9. Prichard lectured, inter alia, on ethnology at various
times, on the history **of pestilences** (October 1827)
on the doctrine of a vital principle (November 1828),
philology (April 1832) and on phrenology and animal
magnetism (January 1835).
10. See E.J. Browne, The Secular Ark, London, 1983, for an
account of the background to contemporary zoogeographical
theories.
11. William **Roscoe** (1753-1831) first president of the
Liverpool Royal Institution, was often cited as the
prime example of the culturally accomplished merchant,
who might be imitated by the Bristol commercial **classes**.

For a useful account of the collections and interests
of Richard Bright (senior), see the section on him in
R.M. Kark and D.T. Moore, 'The life, work and geological
collections of Richard Bright, M.D. (1789-1858); with
a note on the collections of other members of the family',
Archives of Natural History, 1981, 10, Ci), 119-151.

The article by Neve in Inkster and Morrell, Metropolis
and Province, o2 cit. incorrectly ascribes this collection
to Richard Bright, junior.

12. FFBJ, 25 June 1825, page 3,
13. FFBJ, 5 November 1825. The budget for the Mechanics Institute for the year 1825-26 **was a** mere £165.
14. Latimer, Annals, op.cit., 288289. For Mechanics Institutes as failed attempts at bourgeois persuasion, see S. Shapin and B. Barnes, 'Science, nature and control: interpreting mechanics institutes', Social Studies of Science, 1977, 7, 31-74, and I. Inkster, 'The social context of an educational movement: a revisionist approach to the English Mechanics Institutes, 1820-1850', Oxford Review of Education, 1976, 2, 277-307.
15. All the evidence for the activities of this Society is culled from the FFBJ or, more importantly, the Mercury.
16. See 'Proceedings of the Society of Enquirers: a reply to E.V. Rippingille', Bristol pamphlets, B 2309, Bristol Central Library.
17. FFBJ, 31 March 1827. On Herapath and Rootsey, see A. Prichard, The early history of the Bristol medical school, Bristol, 1112, 7-11.
18. On phrenology, see inter alia, Steven Shapin, 'Phrenological knowledge and the social structure of early nineteenth century Edinburgh', Annals of Science, 1975, 32, 219-243, and the thesis by Roger Cooter, 'The cultural meaning of popular science: phrenology and the organisation of consent in nineteenth century Britain', Cambridge University Ph.D. thesis, 1978.

19. John Cannon, The Chartists in Bristol, Bristol branch of The Historical Association pamphlet, Bristol, 1964.
20. On Miller, **see** W.D. Conybeare, and his memoir on the **naturalist**, in The Philosophical Magazine or Annals of Philosophy, January 1831, **pages 3-7**; 'H.J.', in the Bath and Bristol Magazine, 1832/**1834**, **2**, **pages 111-112**. Dr Michael Crane of the Bristol Museum and Art Gallery is working on Miller, as well as other **museum** workers in nineteenth century Bristol.
21. See the BI reports for 1831 and 1832; see also the BI deposit 32079 (40), and the second volume of the Jefferies Collection of materials relating to the Institution (being column 23 of the collection) ref. no. SR 3EI 26065/6, in Bristol Reference Library.

The bulk of the money for the eventual purchase of the Miller collection **came** from lectures by Henry Riley on zoology; Rev. Lant Carpenter on astronomy, and gift from the vice-presidents of the BI, especially Beeke, Richard Bright, Sir E.C. Hartopp, Bart., and J.S. Harford. But the sale was not complete until 1832/33, although the Committee hoped to profit from the sale of duplicates.

22. For Stutchbury,- see the annual and museum reports for the BI, 1831-1836 and the minute books of the museum sub-committee 32079 (201 and (211; a useful collection

of curator's reports is In the Jefferies Collection,
B 26066 (see footnote 211 from 1837 to 1857. Dr.
David Branagan of the Department of Geology,
University of Sydney is working on a full study of
Stutchbury.

Stutchbury is inaccurately identified in M. Berman,
Social Change and Scientific Organization: the Royal
Institution 1799-1844, Ithaca and London, 1978, page 179.

23. See the Geological Magazine, 1904, 5, page I. No
practical geological skills seem to have been taught
in Bristol until the opening of the School of Mines in
1856: this was established out of the old Bristol
Diocesan trade school and had about 30 students from
the South Wales and Bristol fields.
24. I make use here of Morrell and Thackray, op.cit.,
and of the essays in R. MacLeod and Peter Collins, (eds)
The Parliament of Science, Science Reviews Ltd., North-
wood, Middlesex, 1981. See especially Philip Lowe,
'The British Association and the Provincial Public',
pages 118-145.
25. See J. Latimer, Annals, op.cit., page 375.
26. The magazine was edited by G.T. Clark.
27. For a discussion of the statistical movement in general,
but also one where the information regarding Bristol is
inaccurate, see M.J. Cullen, The Statistical Movement
in early modern Britain, Hassocks, Sussex, 1975, pps.
121-123. See also P. Abrams, The origins of British

Sociology, 1834-1914, Chicago, 1968, pp 35-38. For the Reports of the Statistical Society In Bristol from September 1836-1840, see volume B 4592, Bristol Central Library, which omits the last meeting of 1842. Honorary members of the British Statistical Society included the Glasgow statistician James Cleland, and W.R. Greg, (1809-1881) who had been educated in Bristol by Lant Carpenter.

28. First and second reports of the Society.
29. On the origins of Bristol College, see FFBJ, 28 November 1829 and 20 August 1830.
30. The various opening addresses appeared in FFBJ, 22 Jan 1831, with Andrew Carrick's being the longest. Carrick spoke of a Christianity where 'minor differences in opinion are merged in the single, the grand outline of Christianity itself.'
31. On Gray and Monk, see Soloway, Prelates, op.cit., 249-252 and 302-3031 and DNB.
32. For Bagehot, see N. St. J. Stevas (4th) h/sli-^+ Qwa t .t kt c. Uack 4 Lr - . ^-, 14 6S
33. W.D. Conybeare, Inaugural Address to Bristol College, on the application of classical and scientific education to theology, London, 1831.
34. See J. Estlin Carpenter, and his introductory memoir, in Nature and Man, by W.B. Carpenter, London, 1888, pps. 27-29.
35. 'Address of the Committee of the Bristol Institution' drawn up by S.S. Wayte, in January 1848 (and discussed

for a number of years! In Bristol Archives Office,

32079 C821.

- 36' See FFBJ, 20 June 1840. In his study of the Yorkshire Philosophical Society, A.D. Orange notes similar links between the YPS and the York Medical School. See his Philosophers and provincials: the Yorkshire Philosophical Society from 1822 to 1844, York, 1973.
37. J.A. Symonds, Ten years, Bristol, 1861. The 'prosopography' is: gentlemen of no profession 2; gentlemen of commerce, 3; gentlemen of the profession of literature 3; architects 3; gentlemen of science 5; of law 7; of education 8; of the clerical profession 13; of the medical 19.
38. D.E. Allen, The Naturalist in Britain, London, 1976, chapter 8.
39. M. Pelling, Cholera, fever and English medicine, Oxford, 1978, pps. 156-163. She slightly exaggerates the role of Dissent in amalgamating the medical community in Bristol.
40. See E.R. Clark, The history of 100 years of life of the Leeds Philosophical and Literary Society, Leeds, 1924, pps. 234-235, where membership figures increase markedly In the years that mark the imminent demise of the Bristol Institution.

For a study that brings out yet further the differences between provincial locales, and one which

furthermore examines institutions and activities that lasted into the twentieth century (at least), see R.H. Kargon, Science in Victorian Manchester, Manchester, 1977.

Chapter 6

The history of the Bristol Infirmary and its status as a particularly obvious example of public charity in the city, is complex and harder to summarise than the relatively small operation, with its deliberate 'policing' object, that constituted the Bath General Hospital. The historical roots of the Bristol Infirmary, the exact allegiances, social and religious background of its staff and governors, and the size and fortunes of its patients, will only be understood when the history of eighteenth century Bristol is properly examined.'

The existence of two main archival deposits would facilitate the production of a history that improves on G. Munro Smith's considerable achievement of 1917. First, in-patient and out-patient records, now deposited with the city's Corporation archives, could be systematically examined. Second, the remarkable collection of 'biographical memoirs', assembled by the surgeon Richard Smith Jr., (1772-1843), could be fully mined for information. The examples from Bristol's nineteenth century history which will appear in this chapter are partly derived from Smith's collection, and certain features of the archive need explaining.²

The Smith Memoirs are, above all, miscellaneous. Whether collecting materials on his fellow medical men (past or present) or on institutions (such as dispensaries), Smith threw together often disparate materials that nonetheless constitute one of the richest sources on provincial medical culture in the archives of the British

Isles. The archive is uneven, with parts of the materials unascribed and sporadic. This quality will be evident in the accounts of certain individuals and institutions where the Smith Memoirs provide the main source. Utilising both the Smith collection and Munro Smith's history of the Infirmary, certain generalisations may be permitted before individual examples of medical history are examined.

The Infirmary formed part of the business of charitable display that Bristol's commercial elite engaged in - indeed formed part of the culture of reformation of individual misfortune or character that received such extensive subsidy in eighteenth century England.³ Relatively small numbers of 'patients' were admitted to a charitable institution, via the subscriber recommendation system, to receive uncertain medical assistance whose most beneficial feature was probably dietary. Finances came from the body of subscribers, from wealthy individuals or from collections at churches and at Nonconformist chapels; throughout the period 1750-1800, the Infirmary gradually expanded both in size and in the number of patients seen annually. The staff of the hospital had, in Munro Smith's words '... from the first a bias towards Toryism'.⁴ He also suggests certain Jacobite tendencies among various medical personnel, as well as giving hints towards a broader interpretation of the political history of the hospital in the last half of the eighteenth century,

It seems a plausible guess that the religious composition of many of eighteenth century Bristol's elite groups,

including the men who either financed or administered the Bristol Infirmary, was more varied and eclectic than was to be the case in 1810 or 1820. Latimer's Annals testify to the high social standing of Quakers, Unitarians, as well as Anglicans, in eighteenth century Bristol, and Munro Smith reminds his readers that in the middle of the eighteenth century, eight consecutive treasurers at the Infirmary were members of the Quaker Champion family (stretching from 1739 to 1778), and including Joseph Harford (1741-1802), whop held the position from January 1779 to September 1791. As for Jacobite sympathisers, one of the most active of the Infirmary's governors in the 1780s, William Turner, was a 'violent Jacobite', and would drink to the health of the Pretender on his knees. He also donated large personal sums to the Infirmary's

The Infirmary, with its charity/subscriber entry system (either individual, township or parish), its gradual expansion throughout the eighteenth century, and its continual proclamation of 'Charity Universal', is another example of the prudent dispensing of the charitable impulse that Porter has traced in his social history of the English bourgeoisie's moralising mission.⁶ Porter has noted that the main energy for such a project came from 'affluent, anxious and assertive' haute bourgeoisie, and Bristol's hospital governors were precisely drawn from a commercial elite anxious to propound the connexion between commerce and moral virtue.

In ways that have already been described with regard

to the founders of the Bristol Institution, the allegiances of the governors of the Infirmary can be said to have changed from the end of the eighteenth century to the period after the ending of the French wars. The Quaker Joseph Harford, Infirmary treasurer, wealthy Whig, friend of Edmund Burke and twice Sheriff of Bristol, converted to Anglicanism in 1780: similar moves were made, for example by John Scandrett Harford, J.C. Prichard and (slightly differently) J.E. Stock, in the early years of the next century. There is as yet no certainty on this matter, but the Bristol Infirmary, by 1820-1825, would certainly bear fewer marks of its 'eclectic' origins (i.e. supported by a variety of figures with different religious faiths) than it had in 1760 or 1770. The change, in the period, should be seen as part of the crystallisation of allegiance to the established church, and indeed political order, that helped give the Bristol Institution its particular cast and character.

The medical practices of the Bristol Infirmary were equally distant from the occult tradition that Barry has seen as one part of the beliefs held by local figures such as William Dyer (1730.1801?) Dyer, a prosperous Bristolian accountant, was a supporter of apothecary based medicine, not easily placed in either 'plebeian' or 'patrician.' culture, who attended the London Medical Society, knew both Jenner and Wesley, but who was also interested in dream analysis, in the healing powers of electricity,

believed in possession by the Devil, and who was a loyal Anglican, close to Methodism with many Quaker friends.

Dyer embodied, and could find meaning within, a widespread 'middling' order of citizenry that did not participate in the more extravagant displays of corporate commercial wealth, and which insisted on a philosophical eclecticism that included the ideas of Behmen, Law or John Hutchinson. Minor clergy might easily have been high church Tories, with eclectic philosophical leanings, just as a considerable percentage of doctors tended to conservative politics. By 1820, the eclectic elements that existed in mid-eighteenth century had become less easy to detect, and were certainly missing from the shared natural-theological Anglicanism that characterised much of the scientific culture of the 1820-1840 period. The 'broad church' evangelicism of 1820 presented itself as a progressive, scientifically informed contrast to some of the work of Bristol authors such as Catcott or Dyer's friend Stephen Penny and his Letters on the Fall and Restoration of Mankind of 1765. If the early ecumenicism of the Infirmary was a deliberate contrast to the Tory dominated St. Peter's Hospital, its nineteenth century history was that of close links with this hospital of the Corporation of the Poor, an alliance assisted by the demise of a Whig dominated council in 1812. A similar charge in the running of the dispensaries is visible: Wesleyan activity in the dispensary of 1747, or Methodist

concern with the dispensary of 1775 was missing from the Clifton dispensary of 1813.

One further speculation may be made at this point. Historians have attended to the history of the word 'scientist', and to its inception at a meeting of the British Association, in Cambridge in 1833, by William Whewell.⁹ There may be a deeper historical background to this idea of 'origins' than is sometimes thought. As part of the deliberate attempt to dissociate from the plural and informal culture of 'natural philosophy' that had prevailed in the eighteenth century, it is possible that the inauguration of 'institutions' of polite culture based on science, and the etymological results of this, are the benchmark of the cultural project of differentiation and distance within Anglicanism. The pluralism and eclecticism of the order of 'natural philosophy' that might well contain elements of Methodism, mysticism, the occult and residual superstition, had to be curtailed: the Anglican and Unitarian reaction could then be founded on the basis of a Newtonian natural theology that had finally broken with almost all evidence of 'mysticism' and philosophical catholicism.

One objection to this argument, that the post French revolutionary commercial elite of Bristol had, by 1820, closed ranks, and flushed out the interest in scientific practices that evoked a now disagreeable eclecticism, may be that some notable medical members of that elite such

as the physician Edward Long Fox (1761-1835) showed **an interest in animal magnetism. An interest in animal magnetism would be particularly likely in a doctor also concerned about psychiatric matters, and there is also** evidence that Long Fox had his attention brought to the matter by the work and propaganda of John Boniot de Mainauduc (c.1751/52-1797).¹⁰

Materials at the Library of the **Royal College of Surgeons** cast some light on this mysterious exponent of animal magnetism, as well as giving clues to the nature of his readership. De Mainauduc appears to have been of French descent but was born in Cork, **Ireland. He was a** pupil at the Great Windmill Street School of William Hunter in 1769 and was said to have been **a dresser** under John Hunter in 1770. **He became** a pupil of George Fordyce, **was a member** of the College of Surgeons in 1779, and took M.D.'s from Aberdeen (1782) and Rheims (1784). The subscribers to his Lectures of 1798 (published by his executrix) included minor aristocracy, doctors, clergymen and about forty unidentifiable **men and** women. Edward Long Fox appears as one of the 'students to Dr. J.B. de Mainauduc's science', in a four page list of about two hundred names, compiled in the eighteenth century, presented to the College of Surgeons by R.R. **James**, F.R.C.S. in 1939. **Among the names are Sir R. Hill (1732-18081, artist P.]**, de Loutherbourg (1740.18121 and the surgeon William Bromfield (1712..-1792).¹¹

But no correlation **can be made between an** interest

in animal **magnetism and an** accompanying commitment to anti-establishment, eclectic, natural philosophies. Long **Fox's** activities in the Bristol Bridge riots of 1793 indicate a liberal desire to **represent** the interests of Bristol's citizens against the unjust tolls system, but within a hierarchical idea of responsibility And moral economy a long way removed from outright Jacobinism or even popular Dissent. The difference between an exploration of the possible uses of animal magnetism in the speciality of 'psychological medicine', and the total philosophy expounded by Ebenezer Sibly, (1751-1799) for example, is an important one.¹² Bristol's most eminent psychiatric writer, and one of its stoutest conservative social luminaries, James Cowles Prichard, could also interest himself in the therapeutic possibilities of animal magnetism while being sceptical about its grander, or social, claims. The detachment of animal magnetism from any surrounding ethos of political radicalism or social critique might be thought **of as one example** of distancing the 'serious', 'responsible' practitioner from the totalising eclecticism that appealed to William Dyer, or James Graham, or Ebenezer Sibly. The sources of instruction for a whole way of life were not to be found in a 'natural philosophy' that encompassed almost all the events of an individual (as with Sibly¹¹ but In a conservative Christianity under whose aegis science and medicine settled and offered support. For all his European reputation and indeed

connexions within **England itself**, **Thomas Beddoes** was **ostracised** by the majority of **Bristol practitioners** from **1800 onwards**, and no real interest in his **pneumatics** project was forthcoming, although the preventive medicine he also practiced was less controversial.

What is being argued is that the transition from late eighteenth to early nineteenth century cultural forms, and the parallel change in the language to describe such **forms, is a** transition from plurality and relative **openness** to a situation where the founders **and funders of** 'culture' wished for exclusivity and institutionalisation to make concrete-'the reaction against eclecticism that the political circumstances of the time **seemed** to demand.

As John Latimer reminds his readers, Robert Southey perceived the social structure of Bristol in the early nineteenth century as not particularly united by feelings of popular Jacobitism, or even a popular **Toryism, As was** common in eighteenth century life.

The Bristol Infirmary itself displays a history that suggests gradual expansion in bed capacity and size from about 1749 onwards, while not giving evidence that the medical men within it came to dominate hospital affairs until at least 1832, an era famous also for the founding of various educational and corporate changes in the structure of the medical profession. This relative lack of control by the 'faculty' (i.e. medical practitioners) is established by

the records of battles over rights of governorship between subscribers and medical men. While the number of beds was expanded from 76 in 1749 to 132 in 1755, physicians and surgeons engaged in repeated skirmishes over, importantly, rights of admission for patients and signature for bringing them into the hospital. One generalisation that Munro Smith's History allows one to make is that the surgeons displayed considerable independent authority within the Infirmary at mid-century.¹³ During the 1770s, physicians and surgeons jointly signed the admission rules, and in 1778 the surgeons nearly added a sixth honorary surgeon to the hospital list without consulting the rest of the faculty. By the early nineteenth century, the ferocity of the arguments amongst physicians and surgeons was so intense that, from 1810 onwards, the rule that the medical faculty formed an ex-officio part of the House Committee was rescinded, a situation confirmed in February 1811, which persisted until February 1832. The apothecaries appear to have been outside this protracted argument between governors, surgeons and physicians.¹⁴

The central feature of the row that led to the exclusion of the faculty in December 1810 was the ill-conduct of certain of the hospital surgeons and the subsequent challenge to the authority of the Infirmary's officers, especially the treasurer, Samuel Birch. The way to halt further examples

of misconduct by the surgeons, especially the shielding of colleagues or apprentices who had behaved incorrectly, or the arbitrary selection of pupils, was to exclude the faculty from the General Board; instead, a group of 'House Visitors', appointed from the subscriber dominated House Committee, would keep a weekly watch over the hospital's affairs. The men who controlled this committee were drawn from the local mercantile world which provided the activists in other areas of Bristol's charitable life and its government.¹⁵ By maintaining the exclusion of the faculty in the 1820s, the hospital management showed its anxiety to imitate certain London hospitals, where the faculty was excluded from bodies designed to control professional conduct. There is also evidence in the 1820s that the number of surgeons in the city was high (over 100) and that those on the staff of the Infirmary were seen as profiting from taking pupils and as exercising too much power over the admission and discharge of patients.¹⁶ The evidence for professional overcrowding is borne out by the long debates on rotational schemes and periods of election for service at the hospital: in 1824 for example, when the exclusion of the faculty was reconsidered (and confirmed), surgeons were elected for life. Physicians were also notorious for staying put often for decades.

The re-establishment of medical faculty presence in the governing of the hospital in 1832/34 coincided with the

institutionalisation of medical education in Bristol, **and with the agreed increase in the number of permitted pupils (now enlarged to six) for each of the five physicians and surgeons. But the ferocity of the arguments of 1810 and 1811** can be judged by the fate of the sixteen year old **indentured surgeon trainee Edward Pelly, who. it was claimed** had been sheltered from proper punishment over the case of a patient suffering from ulcers, called Charity Filer. Pelly treated Filer because she alleged that the surgeon who was meant to be looking after her, Robert Jones Allard, was uninterested in her case. Pelly became a scapegoat in the demarcation dispute that broke out over surgeons' duties, both between each other and with regard to trainee pupils. Pelly left the hospital and was dead from consumption within eighteen months.

The Infirmary's physicians, in the early nineteenth century, were almost invariably men of Scottish medical education, with some of them embellishing this background by attendances at Oxford, Cambridge or continental medical schools. And all of them were of Anglican, Unitarian or Quaker persuasion, with a clear **preference** for conservative political opinion, **best expressed** in the convivial setting of the debating and dining clubs favoured by the Infirmary's medical officers. Andrew Carrick, J.E. Stock, J.C. Prichard, **George** Wallis, and John Howell **were** all Scottish trained, conservative physicians. There were different views about

the place of extensive phlebotomy in daily practice (for example Prichard and Henry Riley, **who was Paris** educated, used bleeding extensively, **whereas H.H. Fox** and J.E. Stock tended not to use it so extensively); and there were relatively small political differences between candidates forelection to the hospital that could **appear as major** sources of division: the 1828 election of George Wallis, over the 'evangelical' candidate John Howell **was one example**. Wallis was opposed by local evangelicals, orchestrated by Hannah More: his lectures on anatomy and related subjects in the late 1820s nonetheless reveal him as a careful natural-theologically inclined comparative anatomist whose Edinburgh M.D. and Cambridge **B.M. are more** indicative of his orientation in the profession than his reputation as an 'anti evangelical' threat to the Infirmary staff. 17

The physicians at the Infirmary from about 1800 to the early 1840s were: Walter Kennedy Craufuird, (b 2 d.1817) M.D. Glasgow, Elected: Nov 18 1802. Resigned: 13 March 1811. Andrew Carrick, (? 1767-1837) M.D. Edinburgh, Elected: Sept 20 1810. Resigned: 21 Aug 1834. John Edmonds Stock, (?1775-1835) M.D. Philadelphia. Elected: 28 Mar 1811. Resigned; 30 Jan 1828, James Cowles Prichard, (1786-1848) M.D. Edinburgh. Elected; 29 Feb 1816. Resigned; 7 June 1843. Henry Hawes Fox, C71788-18511 M,D. Edinburgh. Elected;29 Feb 1816. Resigned;15 May 1829, George Wallis, Cb ? d. 1872) M.D. Edinburgh, B.M. Cambridge, Elected:21 Feb 1828. Resigned: 3 Jan 1855. John Howell, (b ? d.1857). M.D. Edinburgh. Elected:4 June 1829. Resigned: 7 June 1843.

Henry Riley, (b ? d.18481 M.D. Paris . Elected; 28 Aug 1834 . Resigned; 13 Oct 1847 , Gilbert Lyon, (b ? d.1873) M.D. Edinburgh . Elected: 29 June 1843 . Resigned: 18 Aug 1857 .

The size of professional incomes for any of these men is hard to estimate with any accuracy. The careers of Andrew Carrick (1767-1837), and Henry Hawes Fox (1788-1851) provide some clues. Fox was averaging £4000 per annum between 1820 and his resignation in 1829; Carrick's income is laid out in the account of his life composed by the surgeon Richard Smith.¹⁸ The dates are selective, and indicate only Carrick's professional incomes

1789-1790	£ 5-0-0.
1794-95	£ 305-0-0.
1796-97	£542-16-0.
1799-1800	£ 533-5-0.
1803-1804	£1001-13-0.
1807-1808	£1803-9-0.
1810-1811	£2321-1-0.
1813-1814	£ 2047-9-0.
1815-1816	£ 1722-6-0.
1819-1820	£2360-6'-0.
1822 -1823	£1541-16-0.
1823-1824	£1467-8-0.
1826-27	£1465-5'-0.
1828-1829	£ 1130-4--0.
1830-1831	£877-3-0.
1831-1832	£753-5-0.

Andrew Carrick had been particularly involved in the arguments over the expulsion of the medical faculty from the House Committee, **and was** an influential Bristolian figure, who was to be active in the founding of the Bristol Medical School and the Bristol College. But it is yet another sign of the strength of the lay committees at the Infirmary that Carrick failed to prevent the physicians being tainted by the bad conduct of the surgeons. As in other examples the domination of both the governing of hospitals and the initiation of local scientific activity by medical **men was** late in coming: the power of the commercial elite to administer on its own terms the display of philanthropic virtue is the more striking historical detail.

The activities of this small group of physicians, **and their gradual emergence as 'professional' practitioners, separates them off from the melting pot of surgeon/apothecary/druggist activities that was to produce the lowly-paid 'general practitioner' discussed by I.S.L. Loudon.** The fortunes of the provincial surgeon, or surgeon apothecary could indeed be hazardous.¹⁹ Bristol, in 1808 had 20 registered physicians; over 80 surgeons and apothecaries; and 3 surgeon dentists; in 1809 17 physicians, over 72 surgeons and apothecaries, and 3 surgeon dentists; in 1810, 18 physicians, over 85 surgeons and apothecaries, 3 surgeon dentists, and one vet; in 1814 23 physicians, over 100 surgeons and apothecaries,

and in 1831 26 physicians, about 115 **surgeons and** apothecaries, 8 surgeon-dentists, **and 4 vets. Incomes and** prospects for provincial practitioners 'below' the physician category could vary considerably, depending entirely on whether the practitioner **had success in** setting up a practice. As Loudon writes 'incomes in the region of £1,000 per annum must have been rare. 20

It is a fruitful historical conjecture that the ascendancy of the elite medical corps within 'the hospital' saw also the demise of the apothecary based medicine of much of the English Enlightenment. The true victim of putative 'professionalism' within medicine was the eighteenth century apothecary, whose therapeutics were too generalised and too accessible to survive the closure (based around the hospital) that nineteenth century reorganisation was to bring. Bristol Infirmary's first 'House Surgeon and Apothecary', Frederick Leman, whose salary was £130 per annum, from November 1808, may be said to mark the innovation - or institutionalisation - of this tactic, with its implication for future ideas of general practice in British medicine.

Some surgeons did manage to gain considerable incomes and might **be seen c'**s exceptions to the contracted hopes of those below the physician category in early nineteenth century medicine, Richard Edgell **was a** Bristol surgeon who came to earn £1.500 per annum, and Robert Jones Allard (1765-1832) surgeon at the Bristol Infirmary, was

earning £1,800 at the height of his career. On the other hand, William Francis Morgan (1800-1872), apprenticed to Richard Smith Jr., who was resident apothecary at the Infirmary from July 1825 to April 1833, left the hospital for four years and earned £150 in his first year away. From 1837 to April 1854 he returned to the hospital, as a surgeon. His apprenticeship to Richard Smith had cost him 200 guineas. He was elected Consulting Surgeon in May 1854, and at his death was remembered as 'an ideal of everything that was kind and good and true'.²¹ There seems no doubt that some of the platforms for lecturing and demonstrating, that had not existed at the end of the eighteenth century, benefited the successful surgeons of the period 1820-1850.

Four resident apothecaries at the Infirmary, from the 1770s onwards, including Thomas Elmes (d.1777), John Ellis (d.1778), died of typhus fever; as for incomes, J.B. Borlase, Benjamin Mason (d.1783), and Thomas Webb Dyer (d.1833), averaged £40 and £80 per annum. Interestingly, Dyer and his predecessor Thomas Griffiths (1761-1838) were both active members of the Tory Dolphin Society.

In the 1830s, by which time the Bristol Infirmary had 872 subscribers (in 18351, 16 wards and 204 beds, the creation of the 'Resident House Surgeon and apothecary' position helped Frederick Leman to an Income of £130 per annum. Some of the apothecaries, such as William Swayne C1790-18251 who also became MRCS in 1823, were advocates

of the heroic therapeutics, particularly cupping, that contemporary physicians such as J.C. Prichard and Henry Riley also commended. But not only was the fate of the 'general practitioner', both inside and outside the hospital setting, difficult. There were barriers within the hospital itself. Thomas Webb Dyer purchased an M.D. from Aberdeen in 1807 and hoped to succeed Walter Kennedy Craufuird as a physician in the institution. He failed on this and on a subsequent occasion to be elected, while being praised for invaluable service as an apothecary- 22 James Bedingfield (1788?-1860), resident apothecary from 1810 to March 1816, resigned in that latter year over a refusal to grant him a fourth apprentice unless he attended 'midday shop'. Bedingfield set up independently in Stokes Croft, became the author of one of the few notable medical publications to come from Bristol's general practitioners at this time, his Compendium of Medical Practice of 1816, and went on to found a 'Medical Academy' in Stowmarket, Suffolk. 23

The physicians at the Infirmary may not have established a satisfactory **power base** within the Institution itself, until the mid-1830s, **to have pleased** all their number. But there is little **need to stress the great difference in income and status** that physicians came to establish over the other branches of the profession (with some exceptions among the surgeons), or to forget that the combined resources of the medical school, the Bristol Institution and the

alterations in the organisation of medicine would contribute to a powerful degree of status by the period 1830-1840. The overcrowded market for surgeon-apothecaries, many of whom must have come to lowly ends in other parts of the West of England, and the combination of physicians and druggists against high-earning apothecaries such as William Broderip of Bristol make the eighteenth century seem the 'golden age' for apothecary medicine above all. By about 1820, the physicians had come to dominate a crowded world, mostly at the apothecaries expense: the emergence of the general practitioner, as Loudon has shown, was a result of this squeezing of opportunities, and not an 'evolution' from the apothecary himself.

As with other eighteenth and nineteenth century infirmaries, small hospitals, and dispensaries, the prevailing history of the Bristol Infirmary is essentially an administrative one.²⁴ Physicians can be seen to have achieved a higher profile in local affairs by the mid 1830s, partly because of involvement in local scientific culture. And they also conspired with 'the dispensing druggists' to curtail the activities of the apothecaries, whose fate in the reorganised circumstances of the nineteenth century was very mixed. But the salient point is that lay control over the internal affairs of the hospital remained strong, with the physicians (some of whom personally despised individual surgeons) nonetheless being excluded from them for twenty years of the administrative history of the hospital. The gradual emergence of the idea of general

practice was a necessity born of the remarkable increase in the number of provincial medical men at a time when the general economic circumstances of English society were not propitious. But as with the funding of science, an **anxious middle class deemed medicine an appropriate career**, even in difficult times. It is a fruitful irony that many of the initiatives towards professionalisation and institutionalisation of science and medicine took place at a time - roughly 1815-1835 - when money was scarce.

The history of the patient's own experience at this time awaits further study. Monro Smith gives only one table of in-patient admissions from December 31 1761 to December 31 1762:25

Fevers of all kinds	162	Dropsical disorders	46
Inflammations	14	Palsies	16
Mortifications	12	Haemorrhages	13
Malignant sore throats	9	Jaundice	2
Pleurisies and pert-	42	Gravel	5
pneumonics		Stone	8
Billious cholics	2	Ischuria	2
Pictonic cholic	20	Diarrhoea and	13
Asthma	7	Dysentery	
Rheumatism	54	Scurvy	6
		Leprosy	10

He adds that surgical complaints Included tumours, abscesses, **contusions, fractures, wounds, diseases of bone, and large** numbers of ulcers. I.S.L. Loudon has attributed the **remarkable persistence of leg ulcers in the disease break-**

down among Infirmary patients (at Bristol and elsewhere) to sub-clinical scurvy. 26 By the end of the Napoleonic Wars, the number of in-patients received in one year (1816) was 1380; in 1826, it was 1662.

The administrative history of the hospital forms part of the moralising mission that 'charity universal' embodied. For example, the 'new building scheme' of 1786-1792 clearly revealed the sources of finance for the charity. 27 Church collections and annual subscriptions played the usual important role, but so did large contributions from the Turner family, especially the fiercely Jacobite Infirmary trustee William Turner, who bequeathed £1000. (Turner at one stage was set to marry Hannah More). The collections, through charity benefit performances for the Infirmary, between (for example) December 1792 and February 1793 reached £1912. There was, in the 1790s, an increase in the number of annual subscribers (570 in 1792, 648 in 1794) and the 918 subscribers in 1797 brought in £2,202 per annum. 28,

But again an interesting change takes place in the period 1815-1835. The number of subscribers to the Infirmary itself was reduced; money itself was scarcer, and the gathering of funds for the new 'West wing' between 1810 and 1814 marked the crescendo of the philanthropic enterprise for at least three decades. In the mid 1820s the minutes of the hospital committees indicate that the hospital was financially reliant on accumulated capital stock (much of this being managed by the wine and provision

merchant F.C. Husenbeth) rather than from collections of **Divine Service**, since it was deemed unfair to continue these.²⁹ Performances of the Messiah for example, as well as pressure on parochial collections, fell away. The alterations in structure of the medical profession were very much taking place in a shrinking economic context.

Comparisons between Bristol and Bath at this time are made difficult by the fact that the Bristol Hotwells Spring was completely out of fashion: indeed the physician Andrew Carrick attempted rather belatedly to propagandise on its behalf in a book published in 1797 which brought him **some fame**.³⁰ And the sophistication of argument over the merits of the Bristol spa waters was nothing like that generated in Bath. Where there is an analogy is in the place of the hospital as a site for philanthropic display. The Bristol records indicate long arguments over the basis of control for the admission of patients; the size of deposit money (12/- if the patient **came from** more than 12 miles distant, 40/- over 30 miles) **and endless** wrangling over termination of stay or **excessive** attendance at out-patient time. The entire story of 'the patient' occurs within the structure and controls of philanthropy, forming one part of the hierarchy of charity dispensation and largesse. And, to put it crudely, both cities were swamped with doctors by the period of the great Reform Act.

This overcrowding was accompanied by a notable increase in class stratification within medicine, which was itself a feature of the larger political reforms of the 1830s. One result of this was that the Bristol Infirmary was cleanly thought of by contemporaries as having become a Tory stronghold. Another was that aspiring doctors often found themselves working in non-infirmary contexts, and above all in the dispensaries.

The contrast between the general history of the Bristol Infirmary and that of, for example, Manchester, seems all the more striking in the light of recent historical research. The work of Pickstone and Butler has exposed a Whig / Liberal initiative in the hospital expansion campaign in Manchester in the late 1780s and early 1790s.³¹ Established local surgeons' families (above all the Whites and the Halls) provided opposition to aspirations of Scottish trained physicians keen to extend, by the increase of honorary staff at the Infirmary, their place in Manchester medicine. By 1790, the conflict of interest between established Tory Anglicans and intrusive, anti-slavery, mildly libertarian Whigs came to a head. Some part of the Whig platform was also attractive to middle class evangelicals. Two products of these struggles were the Manchester House of Recovery and perclval'S Medical Ethics.

No such initiatives, of this political complexion, are apparent in the history of the equivalent Institution in Bristol. While it is true that the corporation of the city

was dominated by commercial, often slave owning Whigs until 1812, there is no evidence **for a** thrust to power by Scottish trained physicians of a Liberal **persuasion** in the period around the French Revolution. Political affiliations within families of surgeons and physicians were quite as likely to be Tory as Whig in the eighteenth century: the physician corps by the era of municipal reform of the 1830s was markedly conservative, without there having been any equivalent reform period as in Manchester that produced institutional changes. Barry's work on eighteenth century Bristol is likely to show that Dissenting **presences** in the life of medical charities in the City became increasingly rare as the century grew older. The absence of radical middle class initiatives of a morally persuasive kind was undoubtedly complicated in the Bristol example by the history of the Atlantic economy and the size of the West India trade, when compared with the early industrial experience of Manchester.

Some of the idiosyncracies of the Bristol example can be judged by illustrations from the history of local dispensaries. The existing records on the first Bristol Dispensary, of 1747, are scarce, but indicate that it was the creation of Wesleyans, and that John Wesley's Primitive Physic was produced, according to Barry, 'to help the dispensary work'.³² The second Bristol Dispensary,, founded in October 1775 is the one which is more instructive when compared with the later Clifton Dispensary. The Dispensary of 1775 was

established by Tabernacle Methodists, initiated by a Mr. Joss. Miss Elisabeth **Brain was first treasurer, soon** replaced by Samuel **Beach**, with Robert **Simpson as** apothecary. Advice on the procuring of medical staff was offered by John Coakley Lettsom (1744-1815) **and there were 2** physicians, **2 surgeons and 2** apothecaries. The surgeon and physician Abraham Ludlow (1737-1807) played a particularly important role in the Dispensary's activities. Ludlow was celebrated in local medical circles for having elevated himself from surgeon to physician by taking a degree at St. Andrews in November 1771: he came to enjoy an annual income of over £2500 per annum, after leaving the Infirmary, chiefly from small fees. 3a

Ludlow attended the Dispensary as Physician, **was one** of the founders of the Bristol Library Society in 1772 and kept a smallpox hospital on Barton Hill.³⁶ In one year, not specified by date, at the Dispensary he attended the small number of 400 persons and claimed that over 150 women had been 'put to bed' by midwives, the Dispensary being designed for 'the relief of sick persons and attendance upon poor maimed women during confinement'. At this time the annual income of the institution was £260, having started with just over £28.³⁴

The rules and government of the Bristol Dispensary were conventional, as far as rights of admission were concerned, and administered, at least by the women's committee, from the bookshop of the evangelical bookseller Thomas Mills, in Wine

Street. No one was eligible to attend the Dispensary who could attend the Infirmary; no recommendation from a subscriber would be accepted if the person being recommended could themselves be a subscriber; no person could have more than 2 sick patients and one midwifery patient per year per guinea subscribed; no midwifery patient labouring under venereal complaints would be placed under the care of the Dispensary. It was the job of the women's committee to recommend midwifery patients 'one month at least before they lie in'.³⁵

During 1776, 175 patients **were treated, at an average** cost of 5/9d per patient; subscriptions in this second year of life had reached £83-5-9. It was one of the features of Abraham Ludlow's activities in the Dispensary to extend midwifery activities, and in 1777 there were 66 midwifery cases dealt with, and 393 sick-cases attended to, at an average cost of 9/2 per patient. Mr. Till Adams and Mr. Padmore Noble were at this time accoucheurs in general; from 1779 Till Adams took a diploma and practiced as a physician until his death in 1790. The personnel seemed to have worked sporadically at this time, and the charity was never financially affluent. In 1779 Padmore Noble took the step of refusing £50 for his midwifery work. In 1781 a Mr. Shelland and a Mr. Carpenter were chosen as apothecaries, and It was established on 26 March of that year that 'all new apothecaries In future were to take the part of midwifery'. This appears to have been paid at the rate of twelve guineas a year, and both Shelland and Carpenter

had practiced as private apothecaries. Shelland did not stay more than a year in this post, but by 1782 the Dispensary had had 2846 sick on its books, and 994 midwifery cases. Income was £291-2-4d.³⁶ A newspaper report for 1784 established that 145 lying-in women were delivered, 414 patients had recovered and 21 relieved by means of this institution. **There were 195 subscribers**, and the charity **was seen as** an 'auxiliary to the Bristol Infirmary'. The average income for the first decade of the Dispensary's life was around £240-£250 per annum and the medical staff **were listed, from 1782 onwards, as physicians (2), man-** midwives (3) and an apothecary. For example, in 1793 William Rolfe was chosen as House Apothecary, out of a choice **of nine candidates, at a salary** of £100. **He was succeeded** by his son, of the same name, in May 1799, and Rolfe Jr. **was one of** the founders of the Bristol Lying-in Institution for poor women.

An abbreviated statistical account of the activities of the Bristol Dispensary for selected years gives evidence on the question of numbers and of finances: the main years covered are 1783 to 1799, with illustrations from earlier (and later) years. The figures are for a) numbers of lying-in women delivered; b) numbers of sick treated; c) amount of money gathered by subscriptions and expended, together with some figures for the number of subscriptions per annum; 37

1778 155 **Lying-in cases**

398 sick cases

£239 in expenditure

(By 1782, during which time		the charity had been going for
eight years,	994 lying-in cases	had been seen and 2846
'sick' cases.	It is of interest	that the deliveries had
resulted in a total of 1009	births,	503 males and 506
females. No statistics are	given	for infant mortality.
Expenditure and income for		the years 1782 was £291.2.4.)
1783	145	Lying-in cases
	414	sick cases
	£291.2.5.	income/expenditure
1784	161	Lying-in cases
	347	sick cases
	£275.13.0.	in income (with 202 subscriptions)
1785	173	Lying-in cases
	442	sick cases
	£390.16.0.	income/expenditure
1786	181	Lying-in cases
	492	sick cases
	£337	income/expenditure (with 256
		subscriptions)
1789	192	Lying-in cases
	566	sick cases
	£509.14.6.	income/expenditure
1790	228	Lying-in cases
	579	sick cases
	£541.0.0.	income/expenditure (with 279
		subscriptions)

1791	208	Lying- in cases
	626	sick cases
	£ 432.0.0.	income/expenditure
1794	191	Lying- in cases
	571	sick cases
	£ 497	income / expenditure
1795	216	Lying- in cases
	450	sick cases
	£731.6.0.	Income/expenditure
1796	239	Lying- in cases
	510	sick cases
	No income/expenditure figures for this	
	year	
1797	294	Lying- in cases
	550	sick cases
	£ 593.5.0.	income / expenditure
1798	245	Lying-in cases
	582	sick cases
	£668.18.11.	income/expenditure (305
		subscriptions)
1799	208	Lying- in cases
	563	sick cases
	£579	income/expenditure

By 1801, the Dispensary was offering gratuitous vaccination for children, with cowpox, By 1813, the Dispensary was seeing 784 midwifery **cases** [in that year] and 1607 sick

cases. By 1816, the dispensary had been operating 41 years, and had expanded. It now had a constituency that took in the **area** around the 'New Cut' of the River Avon, and the Hills and Harford Bridges. The committee of the charity alleged that a total of 13,836 midwifery **cases**, and 41,436 sick cases had been attended to in the course of the charity's history. There were about 400 subscribers at this point.ds

In September 1807, the evangelical bookseller Mills resigned his position as secretary, having completed nearly 30 years in this post. He had overseen the business of a charity whose activities and personnel testify to the social eclecticism of much eighteenth century medical philanthropy. 44 The Dispensary acted as an additional service to the Infirmary, and, as has been seen, the access to its officers and facilities was controlled by the subscription committee to ensure that those who could attend the Infirmary did so, without calling on the resources of the Dispensary. As with the Infirmary itself, in the eighteenth century, the business of medical philanthropy was not denominationally exclusive; indeed medicine was a common terrain, at least in terms of financial support, doctors' contributions, and lay administration. A suggestive analogy here, when discussing the idea of common terrain, is with the place of science within the commercial elite of the 1820s and 1830s in Bristol. Science, in that example, provided a cultural platform where religious differences within the city's elite might be rendered relatively uncontroversial. It is possible that the business of medical philanthropy represents a similar common activity

in the eighteenth century, and that the strength of lay control in the hospital (even when eclecticism had given way to **an enclosed** mercantile Toryism) **was an echo of the** common commitment to medical charity that had brought the Infirmary into **existence**.

The later history of the Bristol Dispensary is not documented as clearly as its early years, but it obviously continued to be a useful domiciliary service annexed to the Infirmary until at least the late 1830s. In 1841, for example, 281 lying-in women were delivered, 996 sick patients visited and recovered. There were, by this time, two dispensaries in action, at 11 North Street and 32 Queen Square, Bristol, a staff of 2 physicians, four men-midwives, four women-midwives, and two so-called apothecary **and nian-**midwives. Figures offered for a slightly earlier date, 1839, allege that in the 64 years of the Dispensary's activities, a total of 88,182 sick-patients had been seen, and in the **62 years of** midwifery activities, a total of 24,544 mothers delivered. A further breakdown for these figures is not easy, because of the nature of the archival information. A useful study could be made of the place of the Dispensary's activities in dealing with the clear overcrowding that took place in the Infirmary In the early 1830s; In the first months of 1830, for example, no fewer than 233 patients were rejected from the Infirmary for want of room.

This proposal, that the support for the Dispensary, as **a site for the relief of illness , was based on eclectic**

social sources, and that this eclecticism may be distinctive to eighteenth century experience, cannot be said to hold good in all examples. As Barry has suggested, Bristol's joint poor house and lunatic asylum, St. Peter's Hospital, may well have been a Tory, Anglican centre, in opposition to the eighteenth century city's council. Without available archives (the records were destroyed in the second world war) this is hard to establish exactly, but it is possible that some kind of 'apprenticeship' in St. Peter's Hospital was preferred in the successful candidate of the later period.³⁹

The size of Bristol's medical population in the early nineteenth century - say over the years 1805 to 1831 - indicates an increase in numbers in all sections. But, as the figures quoted on 231 indicate, in one part of the profession in particular was overcrowding evident. This was among the surgeons, many of whom must have faced a far from certain career with a great deal of mixed practice being forced upon them, throughout the period from the end of the Napoleonic Wars onwards. Thus, not only were there over a hundred surgeons and apothecaries listed for the city, which had a population (in, say 1814) of about 90,000: by the 1830s it is evident that some surgeons took on dental work as part of their everyday practice. It must also have been likely that the striking number of bankruptcies that marked the life of many of the Bristol Institution's early subscribers cannot have left the surgeon corps untouched.

Shares in the Bristol Institution were taken up by surgeons, not in the successful years of the society, but rather in the late 1830s and 1840s. At that time, individuals from the world of mixed - or general - practice would have been able to buy them relatively cheaply; until then many of them had unknown careers outside the chief centres of medical activity. The main centres for medical activity - at least in terms of 'orthodox' medicine, and of institutions with some kind of formal existence - were: St. Peter's Hospital; the Infirmary; the two branches of the Bristol Dispensary; the Clifton Dispensary; the Eye Dispensary; the Dispensary for Bedminster; the Lying-in Institution; the Institution for the cure of diseases of children; the Dorcas Society for Lying-in Women; the St. Philip's Dorcas Society; the Dispensary in Frogmore Street for Complaints of the Eyes.⁴⁰

A brief history of the Clifton Dispensary, active from 1813, illustrates the place of medical philanthropy in the social structure of the time, particularly clear in this case since Clifton became a fashionable suburb only after the end of the Napoleonic Wars, and its richer citizens initiated their medical charity at this time.⁴¹ It is possible - the records however give no indication either for or against - that the supporters of the Clifton Dispensary wished to create a charity that improved on the performance of the late Thomas Beddoes's Preventive Medical Institution.

The first annual report of the Dispensary, describing the preliminary annual meeting of January 10 1814, shows that

the Reverend J. Hensman was in the chain, and that one of the physicians to the institution was J.C. Prichard. There were two surgeons attached to charity, which had run 554 admissions in 1813, 160 of these receiving vaccination. The most important categories of sickness listed were:

Atrophia: 6 recovered, 3 died
 Hepatitis: 16 cases, all recovered
 Hydrocephalus acutus: 12 recovered, one dead
 Menses cessantes: 12 recovered
 Pelsis p.lmanolis: 15 recovered, 6 dead
 Pneumonia: 25 recovered, one on cure
 Rheumatismus: 15 recovered, 2 dead
 Scrofula: 18 recovered, 4 dead
 Vermes: 30 cases, all recovered

The report states that the population of Clifton was 8000 at this time; that 4000 in that population were 'in a state of dependence or indigence'; and that nearly 3000 of these 'applied for donation at the Jubilee'.

There were 184 subscribers and receipts and outlays were running at £191 in this first year. 42

Activities in the second year increased slightly: a financial turnover of £240, with 487 cases dealt with, including 100 vaccinations, These were, inter alia, 20 cases of enteritis; 48 of pneumonia (41 recoveries; 7 on curet; and 33 cases of vermes. There is also a brief description given of the types of surgical cases dealt with at the Dispensary: 11 contusto; 33 obstetricatio: 17 ulcus.

The scale of activities at the Dispensary increased slightly in the following years, The third annual report shows receipts and outlay of £226-11-5, with 683 cases seen in the previous year. The report states that 1 in every 4 of the 'indigent' of Clifton 'became objects' of the institution, and the major categories of disease treated were pneumonia, rubeola, phthisis (either pulmonalis or incipiens). In surgery cases, 61 obstetrico, 24 scArofula and 27 ulcus were seen.

The social relations of medicine, as embodied in the philanthropically **based access** to the Clifton Dispensary, are laid out in the roles of the charity. All the major Clifton families figures in the list of subscribers. The Dispensary was open for 2 hours a day, and the chronically sick were to present themselves, complete with recommendatory ticket, between 10 and 12 noon on Tuesdays and Fridays. Patients had to be residents of the parish of Clifton, and 'no person was to be considered an object of the Institution who had not been a bona fide resident in the parish for at least three months'. Rule XVII stated that 'no domestic servant whilst actually residing under his or her master or mistress roof would be deemed an object of the charity'.⁴³

By the mid 1820s, the Clifton Dispensary was in financial difficulties and the efficiency of its subscription system was failing. By 1827 the Dispensary, (situated now In an Increasingly populated and salubrious resortj, was in further financial trouble. Despite a drive

on parish collections, **these** yielded only £95, and **subscriptions themselves were running only at £23511-0d.**

The fifteenth annual report claimed that there was still a **medical staff of 2 physicians and 2 surgeons**, and that 1752 sick cases had been dealt with for the year up to December 1827. **But expenses were running at £436-6-9, with £60** payable to the apothecary, Mr. Roblyn, with £92 to Mr. **Smerdon, dispenser. Drugs cost £69-15-6, leaving a balance** due to the **treasurer** of £57-3-6/d. **It appears** also that many applicants to the Dispensary were refused service because of the inadequacy of their subscription tickets. The rules of the charity had been lightly altered, and vaccination was now offered without the need for a dispensary ticket; persons receiving parochial relief were also now entitled to tickets from the overseers of the parish.

But debts continued, the shortfall in 1828 being £76-9-4d. (The contribution of some of Bristol's physician-scientists, such as J.C. Prichard, to the activities of the Dispensary, continued with the arrival at this time of the Paris-trained Henry Riley on the Dispensary's roster).

In 1829, the debt was somewhat reduced, and 839 cases seen, with 529 surgical, Including 91 midwifery cases. In 1830 and 1831, an average of 800 medical cases and 450 surgical **cases were seen**, with the financial debt reduced. The report for 1832 shows the scale of activities increasing during the cholera epidemic, when the poor could use the Dispensary without any tickets, but at the recommendation of

the Board of Health. There **were** 70 deaths from cholera recorded by the Dispensary's medical staff.⁴⁴ By 1839 the Dispensary was to be used as a teaching site for those taking the exams of the Worshipful Society of Apothecaries.

The Bristol and the later, small, Clifton Dispensary **show how medical relief, organised in this way, was founded on a fairly rigid (indeed timetabled) manifestation of philanthropy. The culture of medical relief was a fraction of the hierarchical totality of social life in the city. And the statistical information on the Bristol and Clifton** dispensaries then allowed medical men - notably physicians - to give accounts of the medical pathology and topography of Bristol and its environs, as with C. Chisholm's account of the statistical pathology of Bristol and Clifton, published in the Edinburgh Medical and Surgical Journal for July 1817.⁴⁵ As Loudon has also indicated, the dispensaries, while acting as aids to the Infirmary cannot be **seen, for*** example, as putative fever hospitals, treating **fever cases** that the Infirmary would not handle. In the fever epidemic of 1817 to 1819, of the 2231 patients who received institutional care, 27% were treated at St. Peter's Hospital; 29% at the Infirmary; 44% at the Bristol Dispensary.⁴⁶ This proviso still -allows for the generalisation that medical cases predominated at the dispensaries; and, at the hospital, surgical cases. For the year 1800, Loudon has computed **367 cases** of typhus or putrid fever at the Dispensary and a total of 7 dealt with at the Infirmary,

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while 44 surgical **cases were seen** at the Infirmary and
 14 at the Dispensary.⁴⁷

The routine **cases seen** at the two dispensaries and at the Infirmary may indeed have the division that Loudon implies: it is harder to establish any change in therapeutic procedure out of 'professional' vested interest, such as may have been at work in Bath over the content of the waters. The espousal of 'heroic' methods, especially in the matter of phlebotomy, may be an exception here, since physicians such as J.C. Prichard and Henry Riley became notorious for the extent of their commitment to bleeding.

The Clifton Dispensary was financed and organised by a section of the Bristol commercial and professional classes that was relatively homogeneous and religiously specific in its allegiances - Anglican or sometimes Unitarian, and generally Tory - in ways that hint at the breakup of the 'common front' that had generated the eighteenth century Dispensary. This process of stratification, while not generating any severe political disorder in the city's elite, is confirmed by the appearance of the plans for the new Bristol General Hospital in 1831, whose founders were 'chiefly members of the Society of Friends', according to Latimer⁴⁸. The General Hospital got off to a shaky financial start, and in 1833 it seemed that it might have to close. By 1838, subscriptions were running at about £700 and expenses at £1300; an average of 2500 patients were being seen per year. The foundation of the General Hospital,

in not especially auspicious circumstances , indicates something of the politicisation of hospital medicine in the 1830s , since its mainly Quaker founders saw the Infirmary as a stronghold of Toryism , and that the city needed an alternative . The hospital had four surgeons , three physicians and a house-surgeon apothecary , who was paid £60 per annum . The two most active lay proponents of the scheme were George Thomas and Joseph Eaton , both Quakers , the latter an ironmonger . The figures of patients seen in the first fourteen months of the hospital 's activities were :

	Admitted	Cured	Relieved	Died	Under-treat- ment
Out-patients :	1532	1006	203	29	294
In-patients	192	110	48	24	10

The hospital was at least £500 in debt throughout the 1830s . No physician or surgeon was entitled to sit on the main committee , and the main burden of work in the building undoubtedly fell on the house-surgeon . There was also a high turnover in the number of physicians who worked at the hospital between its foundation and the move to a new . . building in 1858 ; eight physicians resigned from the hospital out of the eleven appointed .

Another example of an independent institution , the Bristol Lying-in Institution , illuminates further the differing attempts to reach into the popular market in order to provide medical assistance . The purpose of this was to

assist 'poor lying-in women; either inhabitants of this city or casual poor who as strangers know not where to procure Dispensary notes, nor can their situation wait for the necessary form of admittance by the committee of the Dispensary'. A small sum - 5 shillings - was the subscription, for which two persons could be admitted. The Institution had the services of one physician, two surgeons, two women-midwives, and one consulting accoucheur, W.D. Rolfe. By the end of 1821, 154 women had been delivered, with expenses running at £64-11-6. In 1823, 363 women were delivered, with expenses at £74-17-7. At the turn of the decade, in 1829, the subscription was now 7 shillings, and 289 women had been delivered in the previous year. The few extant reports on the Institution snake something of the patronage offered by the Duchess of Beaufort at this time.⁵⁰

The extent of useful medical assistance for Bristol's poorer population (outside the no doubt considerable self-help area) is well illustrated by the activities of John Bishop Estlin (1785-1855), and his Dispensary in Frogmore Street for complaints of the Eyes. Estlin was the son of the influential Unitarian minister at the Lewins Mead meeting, John Prior Estlin (1747-1817), **and was** educated at his father's school on St. Michael's Hill. He was indentured to Mr. Maurice, apothecary, and then from 3 January 1804 became a pupil of Richard Smith (collector of the Memoirs) at the infirmary. In 1805 he continued his studies in London, not just at Guy's, as stated in the DNB, but also at St. Thomas's. **He passed** Surgeon's Hall

in 1806, and then went to Edinburgh for two years, attending anatomy with Monro tertius; chemistry with Hope; practice of physic with Gregory; botany with Rutherford. Estlin also became a member of the Royal Edinburgh Medical Society,

Estlin then returned to Bristol, and in 1807 applied for the post of surgeon at the Infirmary. He failed. He applied again in 1810, and failed, in 1812 and failed. In that year - 1812 - he decided to specialise in ophthalmology - possibly out of necessity - and founded his eye dispensary. He attempted once more to enter the surgical staff of the Infirmary, in 1816, and was once more not successful.

Estlin's exclusion from the Infirmary is strange: the historical evidence does not allow for more than speculation, but it is quite possible that in the more conservative - and crowded - medical world of the eighteenth century, his active Unitarianism, involvement in anti-slavery and temperance movements and related matters were obstacles. But this cannot make much historical sense since prima facie it would seem that it was precisely these activities that might enhance Estlin's chances in the eyes of the Infirmary's governors. There may also be quite different and unknown - reasons for his exclusion from the staff of the Infirmary, but Estlin certainly established himself as a successful eye doctor without Infirmary connexions.⁵¹ It appears also that in 1820 Estlin tried to move, from his Dispensary, to the Bristol Eye Hospital for the cure

of diseases of the Eye among the Poor, informing the subscribers to the Hospital that his eight years of work had led him to treat nearly 2000 cases. Once again, his services as surgeon were not required.

The Dispensary was opened on September 29 1812, days of attendance were Sundays at 9 a.m. and Wednesdays at 1 o'clock. In the first year of work, 140 patients had attended. By 1814, 234 cases had been admitted, with the majority of problems being opthalmia 52; ulcers of the eye 21; inflammation of the lids 22; 11 cataracts and 13 incipient cataracts. Estlin financed a good deal of early activity himself, and received £23 from other benefactors. The expenses of the Institution for example in 1816 were £24-15-3.

Estlin had to compete with the Eye Hospital and its surgeon W.H. Goldwyer (1763-1820). Goldwyer was Bristol born, had been a pupil at the Infirmary, and trained in London and Paris. He convened support for an Eye Hospital in 1809-1810, with the Duke of Gloucester named as patron. By June 1817 4285 patients had been seen: 55 cataracts cured, and 3785 different cases seen. Goldwyer was well connected in Bristol bourgeois society, and Munro Smith described him as "a good example of the higher class surgeon in the general practice of the day, an excellent accoucheur and vwell up" in all branches of his profession%.⁵² Over the period 1819-1837, Estlin's labours at his Dispensary gradually came to mean that he saw more patients than did Goldwyer, the

late 1820s being the timewhen the 'overtake' occurred.

Taking the year 1820-1821, Estlin saw 706 patients, which brought the total of patients he had **seen as an eye-surgeon** to 2083. He was treating many children at this time, especially for ophthalmia of the conjunctive coat. 566 of these patients were deemed by him as cured; expenses incurred were £30-3-7, and subscriptions £32-13-3.53 In 1821-1822, Estlin treated 679 patients, of whom 169 were children under the age of five: the main problems were inflammation of the conjunctive coat, and lippitudo. Expenses were £37-17-6 and subscriptions £57-4-8. Estlin's room at Frogmore Street was usually overcrowded and patients watched other patients being treated. This sometimes lead to fainting fits. The annual report for 1821-1822 indicates that he had donations of £57 and more room for treatment. Estlin visitied patients at home, and treatment for the poor was gratis. 54

For the year 1828-1829, Estlin saw 1385 patients (619 males, 766 females) with the main distresses being inflammation of the conjunctive membrane and ulceration on, the cornea. In aggregate terms, Estlin had now seen more patients than Goldwyer, over 11,550 having been admitted since 1812. Expenses for the year 1828-1829 were running at £47-13-0, and donations at £80-9-7,55 Estlin pointed out in the following year that patients came from the iron works of Monmouthshire, and even from 'the remotest part of South Wales' for treatment, and that he never objected to

the distance that his patients had come, i.e. no subscriber **recommendation was being asked based on geographical distance from the Dispensary**. He also appears to have been able to house long-distance patients in lodgings.

By the year 1832-1833, Estlin was proud to point out the following facts: that he had seen 1374 patients that year; that he had seen, in toto, 16,570 since 1812, of whom 13,976 had been cured, 1148 relieved, 116 received no benefit, and 131 still on the books; and that he had achieved this by bearing the initial costs himself, with no titled patrons to help him, based on a reputation for what he had actually achieved in practice. By June 1839, the Eye Hospital **had seen a** total of 15,529 patients. Estlin at his Dispensary had dealtwith 24,294 cases since 1812, with expenses and donations still running at an average **of E80 per annum. 56**

Some of Estlin's opinions on medicine are of interest. **He was a firm defender** of vaccination, and whilst working at the Bristol Vaccine Institution in the 1830s, vaccinated poor children gratis, since many of their eye conditions were smallpox-related. He was opposed to homeopathy, phrenology and above all, mesmerism, In June 1845, he spoke to the fourth annual meeting of the Bath and Bristol branch of the Provincial Medical and Surgical Association, held at Bzistol.⁵⁷ This speech **was a** composite of earlier views that Estlin held on the subject, but he made it quite clear that Mesmerism appealed to the uncultivated classes. Along

with **respectable physicians such as Dr. John Forbes,**
(Estlin praised his exposure of the German Mesmerist Miss
von Gonneru) the task at hand for figures like Estlin was
 to reduce public gullibility, since all the evidence appeared
to be 'reserved for the boys of itinerant lecturers, servant
 girls and hysterical young ladies'. 5V

Estlin's views on social organisation and the moral
 prospects for the urban poor may well have been paralleled
 by his views on slavery, **as expressed** in the Christian
Reformer for February 1834, and based on a visit to the
 island of Saint Vincent (**some sense** of the importance of
 this visit for Estlin can be gained by reading the memoir
 of him by the Reverend William James in the same magazine
 for August 1855). 59 Estlin felt that the negro population
 was not particularly hard worked, or at the mercy of
 physical assault, but that family life was in disarray.
 He favoured a slow abolition of slavery, in order to recon-
 struct the interior strength of familial relations, based
 on Christian principles. This is of course an almost
 universal image of social harmony expressed by Bristolian
 clergyman and doctors, reaching its apogee in the ethnolog-
 ical writings of James Cowles Prichard, and its strongest
 social manifestations in the continual efforts at charity
 and parochial relief orchestrated by men such as John
 Scandrett Harford.

It is important to place Estlin's career the
 idiosyncratic **career of a son of Bristol's most famous**

early nineteenth century Unitarian minister - alongside the important developments in the organisation of medicine in Bristol between 1800 and 1840. For by 1821, the city **had two properly organised centres of medical education**, albeit small: a school of Anatomy and medicine, run by **George Wallis, M.D. (died 1872) and assisted by Francis Gold**, a local surgeon who had translated Xavier Bichat's Physiological Researches on Life and Death; and a medical and surgical school in King's Square. It was the unification of these two places into the Bristol Medical School in October 1833, that marks the true beginning of an 'institutionalised' setting for medical education, in parallel with the other developments that nineteenth century professionalisation **deemed necessary-60**

Figures like Estlin and Wallis lectured in various different settings the Bristol Institution above all - but (unlike the Edinburgh and Cambridge educated Wallis), Estlin was more active in anti-slavery issues, temperance reform and serious philanthropy. But the lectures at the BI - Estlin on the human frame, Wallis on comparative anatomy - both had natural theological glosses. Wallis, when elected to the Infirmary staff in 1828, was at the centre of the aforementioned, controversial election, known as 'Saints vs Sinners', with the evangelical interest (touch of it orchestrated by Hannah Morel working against Wallis's election. In a famously exciting contest Wallis defeated the 'evangelical' candidate, John Howell, by 361 votes to 356.

Wallis had taken on the running of the 'Theatre of Anatomy' from one Thomas Shute, who had initiated activities from 1807: he continued to give private lectures even after the Bristol Medical School had started, partly with the assistance of Henry Riley. Wallis's school offered courses on surgery and midwifery, anatomy and physiology, materia medica, and chemistry. It was recognised by the court of examiners of the Apothecaries Hall, while the medical and surgical school in King' Square was recognised by the examiners at the Royal College of Surgeons.

The contrast between the relatively formal arrangements of the period 1833 onwards, and what had existed prior to this is instructive. Take the careers of two of the first people to give anatomical lectures in Bristol, Francis Cheyne Bowles (1771-1807), and the aforementioned Thomas Shute (? - 1816). 61

F.C. Bowles was indentured to the surgeon Richard Smith at the Bristol Infirmary and completed his education at Guy's Hospital and then St. Thomas's. He commenced practice at 17 College Street Bristol from 1790 and gave free lectures to the students of the Infirmary, with especial emphasis on the teeth. He learnt Hebrew and Italian, saw body-snatching as a necessary evil, and thought that more English students should attend anatomy lessons in France. At this stage in his life, he was a celebrated dandy, wearing an extravagant brooch entitled "Charlotte at the tomb of Werther". Bowles collaborated with Thomas Beddoes

on the giving of anatomical lectures, who used him as a mouthpiece; his collaboration with Richard Smith was more successful (these two young **surgeons** were alleged to have made 100 guineas each from their lectures of 1797, and 50 guineas from their lectures of 1798). In 1800 Bowles **was man**-midwife to the Bristol Dispensary and by 1801 was 'doing a great deal of half-guinea mid-wifery'. But at this stage his career collapsed.

First of all, Bowles began to suffer exhaustion, and by the end **of 1802 Beddoes** insisted that he stop working. In 1803 he took a curative journey to Lisbon and then to the Lake District, before taking **up a career** again. In 1803 he displayed a puzzling mixture **of extreme** ambition, the desire to become no less than a full professor in a proper anatomy school, with permanent anxiety and fatigue. His association with Beddoes may have made the setting up of such a school a problem, but Bowles also had Moravian relatives, and this seems to have counted against him. By the end of 1803 he was starting to read the Bible in an intense way and attend church, presumably in reaction to a more profligate youth. In 1806 he was at last elected to a post as surgeon at the Infirmary but the work proved exhausting, He died on 18 May 1807, having only published a single letter On the protusion of part of the abdominal visceral in the Medical Records and Researches of Ashley Cooper, in 1798.

Thomas Shute, who was elected to the post of surgeon

of the Infirmary in July 1812, had attended the lectures given by F.C. Bowles and Richard Smith and then became a pupil to the surgeon Headington at the London Hospital. (He also attended the lectures of Abernethy and Currie). In 1805 he began to practice in Bristol, but suffered like Bowles from extreme exhaustion, and found the business of major surgical operations too demanding. His election to the Infirmary was at the fourth attempt, but troubles continued for Shute, whose 1807 lectures for students on surgery (the forerunners of those given by Wallis) were ill-attended. Shute charged two guineas for the opening course and lectured at eight o'clock in the morning.

Eventually the course did prosper (eighteen students in 1812, twenty four in 1814), but Shute's private affairs claimed him. Challenged to a duel by a rival for the affections of a young lady who preferred Shute, he appears to have suffered from internal pains and bleeding, but was also himself bled by an apothecary who attended him. According to Munro Smith, '... there is little doubt that the immediate cause of his death was syncope from excessive bleeding'.⁶² This was the unfortunate fate of the man whom contemporaries credited with the founding of systematic lectures to students before the era of institutionalisation and the setting up of orthodox relations between provincial and metropolitan medical educational establishments,

In October 1832, the anatomical school had 23 enrolled students, In the period 1829-1830, the 'other'

establishment, the Bristol Medical and Surgical School, **King Square, included a course of chemistry lectures that** were the first to be given in Bristol recognised . by the Apothecaries Hall. They were given by William Herapath, whose activities in the Society of Enquirers have already **been mentioned. Classes were offered in anatomy and** physiology by Henry Clark, **a respected local surgeon, whose average classes were between** 25 and 27 students for the period 1829-1833. He was to become the surgeon at the Infirmary after the death (ironically, in the Bristol Institution **reading rooms**) of the redoubtable Richard Smith, Jr.. Classes were also offered at the King Square building in materia medica, midwifery and general medicine.

The world of sporadic lecturing by certain motivated individuals, of which some examples have been given, was giving way to more formal organised procedures. The activities of the Bristol Medical School were those established by the Society of Apothecaries who did not require attendance in London 'except for the purposes of examination'. Up to August 1834, the College of Surgeons required that six months surgical training had to be undertaken in the metropolis: from that date, this requirement was dropped* E3 Bristol had established itself as a modest centre of medical education, and its physician elite became correspondingly more prominent in local culture, as noted in Chapter 5. By 1835, according to Pelling, the

medical school was the 'largest in the provinces after Birmingham and Manchester'." It may reasonably be said that this placing of Bristol, after Birmingham, would have been distressing to contemporaries.

For the years 1790 to about 1840, the medical background of the elite physicians of Bristol, most of them with Infirmary posts, was remarkably consistent. They almost all had M.D.'s from Scottish universities, especially Edinburgh. Not until the eighteen tens do changes appear - the Paris training of Henry Riley for example, or the 1836 Cambridge M.D. of James Fogo Bernard (1806-1878), (abetted by periods in Paris, Edinburgh, London and Dublin), or the additional Oxbridge experience of J.C. Prichard or J.A. Symonds (1807-1871), both of them graduates of Edinburgh. Physicians like Prichard and Symonds had extensive private practices as well, but neither individual had an easy entree into the Bristol medical world. Prichard's election to the Infirmary, on his third attempt, was achieved in 1816. Symonds, who came from a medical family in Oxford, had practised in that city after graduation (partly as **a dresser** at the Radcliffe Infirmary) and had come to Bristol not to join the Infirmary staff but as the first physician to the new Bristol General Hospital. It is of interest that on arriving in Bristol, which he was later to describe as 'an essentially Tory city', Symonds was told that a vote for reformers, at the time of agitation, would ruin his career. 6' **He was also**

lecturer in Forensic Medicine at the Medical School.
 In 1848 he resigned from the General Hospital staff.
 By 1849, those having medical **degrees** in Bristol numbered about 35, of which 10 **were** from Edinburgh, 10 from other Scottish universities, five from Oxbridge, one from Dublin, and 5 from London (**3 M.B.'s and 2 M.D's**). 'At least 5 of these men had studied in Paris', according to Pelling.

The surgeons of the Bristol Infirmary, from about 1770 **onwards, were trained in the customary manner of the time. A period of indenture to practising surgeons (sometimes, as with Richard Smith, Jr. , or Richard Lowe (? - 1850), to the father) was followed by experience in one of the metropolitan hospitals before election to the staff of the Infirmary. The costs of training, i.e. the sums paid to the senior surgeon, varied in the period 1770-1830 from 180 guineas to 300 guineas. There were no set outlines for the future career after education was complete; certain individuals, such as Nathaniel Smith (1782-1869) became specialists in midwifery; others, like William Francis Morgan (1800-1872) moved on from his work as the resident apothecary to the Infirmary, to become surgeon to the hospital from 1837 to 1854 and consulting Surgeon thereafter, The average age of appointment to the post, from the time of John Padsnore Noble (1755-1812) to Augustan Prichard (1818x18981 was between 28 and 32 years. John Padmore Noble who had attended John Fordyce's London lectures after his apprenticeship (he was a surgeon from**

1777 to his death in June 1812), was apparently a deist. More typical of the surgical staff of the period after his death were the Tories Richard Smith (father **and son**), Richard Lowe, and Henry Daniel (1783-1859).⁶⁶

The career of Augustin Prichard, one of the sons of the ethnologist, is also instructive. He was apprenticed to his uncle, J.B. Estlin and after further surgical apprenticeship, attended St. Bartholomew's Hospital in 1839, becoming MRCS and LSA in 1840, before gaining an M.D. from the University of Berlin. After further studying in Vienna and Paris he returned to Bristol in 1842. It is possible that J.C. Prichard's resignation from the Infirmary in 1843 was due, inter alia, to the 'Infirmary Board's refusal to accede to his request to create an assistant's post which would have lessened his own responsibilities and which he expected his son to fill'. This son would have been Augustin Prichard, who was lecturing at this time, on anatomy at the Medical School. In February 1850, he became surgeon to the Infirmary and was for many years surgeon to the Bristol Eye Dispensary.⁶¹

The novelty of continental experience among the physicians and surgeons of this time should not be exaggerated; the Scottish estate-owner Andrew Carrick for example, whose income levels were traced earlier, had been educated at Glasgow Grammar School, attended Edinburgh for his M.D., studied in London, Paris and briefly as a pupil of Spallanzani in Rome before returning to Bristol in 1789.

But in the period up to 1840, the influence of continental education and medical ideas and techniques was only of importance, as part of the consolidation of professional expertise that was in turn accompanied by institutional aggrandisements from the 1820s and 1830s.

These aggrandisements do not refer to any part of the medical world outside the Infirmary, General Hospital or Dispensary elite. The providers of medical treatment in mid-nineteenth century Bristol, as discussed by P.S. Brown, represented the wider range of practitioners who appear in the various city registers for the mid-century.⁶⁸ Nor is this chapter concerned with the next group that Brown went on to examine: the herbalists and medical botanists of the same period, whether followers of the 'Thomsonian' system or others.⁶⁹ These networks and these practitioners did not play a part in established bourgeois culture, specifically the medical debating and dining clubs, or the Bristol Institution and its lecture schedules. In 1851, Brown shows that there were fifteen individual physicians with appointments to one of the hospitals or to the Bristol or Clifton Dispensaries. He indicates also that there were twenty seven surgeons with similar appointments at this time, with a much larger number - in the region of seventy three - appearing in the local directories with surgeon's credentials.

As Brown points out, it is important to distinguish the household sizes of the medical groups that he examines. The physician elite had large families, with average

households (situated in Clifton, St. Augustine's parish or Westbury-on-Tryzr of eight or nine persons. There were usually more than three servants in these houses. Surgeons with hospital appointments (or dispensary appointments) had households of about seven persons, with an average of two servants in attendance.⁷⁰ There is little doubt that one may assume the accuracy of this familial typology for the period 1820-1850, and the importance of its information on the relationship between income, settled employment and familial propagation.

The structure of this elite part of Bristol's medical corps, and its organisation, allow for historical speculation on the theory and practice of medicine that such a corps might be said to expound and recommend. A contribution to this debate has been made by Pelling, in her discussion of the physician J.A. Symonds's view on cholera, where she introduces the idea of 'contingent contagionism', as a way of describing Symonds's sceptical position on the spreading of cholera.⁷¹

The question opens out as to whether the debates within the Bristol medical elite - on such questions as the media for the spreading of cholera - can be traced back to an 'Interest' theory of knowledge of the kind suggested in chapter 3 on the nature of the Bath waters.

One medical writer who is not easily fitted into any straightforward historical account is the physician and

eventual asylum keeper Edward Long Fox (1761,1835). Fox had been elected to the post of physician at Bristol Infirmary in April 1786, and a year later was admitted an extra licentiate of the College of Physicians. In 1793 he was involved in the Bristol Bridge Riots, being an advocate of the case against the Bridge trustees, and was also known to be interested in the claims for mesmerism as they were expounded by de Mainauduc. From this time on he had a reputation for Jacobin sympathies, but it is of considerable interest, as Harrison has established, that Fox came to regret his involvement in the Bristol Bridge affair.⁷² After his resignation in 1816 from the Infirmary, Fox became renowned for his writings on lunacy; and for the claims for the system of moral restraint that he practised at Brislington House.⁷³

Fox however had certain medical opinions which do not sit easily with the often quoted view that he in some respects 'anticipated' the findings of Pasteur and Lister, as suggested by Munro Smith. His theory of influenza, for example, which he debated with Thomas Beddoes in 1803, was that influenza was not contagious, and that the use of mineral acid gases to deal with it was superfluous (Beddoes had proposed the use of acid fumigation). Perhaps more suprising, and more celebrated, was Fox's argument about cholera in his Surmises respecting the cause and nature of cholera of 1831,⁷⁴ This text is well known because Fox argued that cholera was of animalcular origin, recommending against it, the use of oils, sulphur and mercury, a recommendation which stemmed from his own experience of the

efficacy of such substances in the treatment of glanders in horses. This argument has allowed certain writers to affiliate Fox with a progressive impulse in debates of the time, an affiliation somehow enhanced by his interest in de Mainaduc's work. What is less often pointed out is that Fox made his text deliberately obscure at certain crucial points, to prevent 'persons when first seized from undertaking the management of their own cases'. Even more strikingly, the visitation of cholera was seen as emanating 'from the Divine Being'. As is clear from his organisation of Brislington House, with its emphasis on the place of divine service in the daily routine, no easy connexion should be made with 'Jacobin' activities (or sympathies) in one period with purely secular (or materialist) explanations of disease transmission in another. Even if the Christian element in Fox's later writings was a gloss, it was prominent and an essential part of his moral argument.⁷⁵

The 1832 cholera epidemic in Bristol was dealt with by concerned members of the city's elite in the ways explicated by other historians looking at the situation in other cities.⁷⁶ A Board of Health was established, with the aim of sending medical officers to the homes of the poor, dealing with burials, and the setting up of temporary hospitals (the only one of those to materialise was set up by Quakers). The so-called 'Anti'-cholera association established soup kitchens and distribution of blankets, and there was extensive expression, both in the press and in the report of the Board of Health that social solidarity between the classes would be

promoted through this display of concerned philanthropy and vigilance. in practice, the rhetoric of parochial paternalism was - as in other Bristol contexts and individual statements - a mask. Some medical men must have left the city at least for the summer of 1832, for as Latimer puts it in his Annals: 'Clifton was almost wholly deserted by the wealthier classes of residents during the epidemic'. 77

Attempts were made to quarantine parts of the city, through the suspension of St. James's Fair, for example. But the cholera came and did its damage, ravaging St. Peter's Hospital, where 168 of the first 261 reported cases occurred. Figures for the full extent of cholera deaths are confused, but it appears that there were 1521 cases reported by October 9th 1832, of which 584 had been fatal. 78 It is perhaps unsurprising that the rhetoric of Christian hope, so prominent in the public discourse of the city's elite at almost all times, should have been especially prominent in 1831-32, to be found in the writings and utterances of such apparently distant social figures as Edward Long Fox and John Scandrett Harford. The high level of anxious rhetoric was closely related to the general reaction against the reform riots of the previous year, the pauper riots in the appalling conditions of St. Peter's Hospital, and the general background of reform agitation. The cholera epidemic allows one stark contrast to be made; between Bath and Bristol, The latter city suffered far more than Bath. A

writer from Bath, **Mrs. B.** Matthews, corresponding with the Reverend W.R. Hay in Rochdale, in August 1832, said:

I hope the cholera is not near Rochdale. We have it on all sides. Bristol dreadful. They are burning tar brands in the streets constantly, 60 were buried from the hospital yesterday. 2000 people cross'd from Swansea in the steam boat since Monday where it has been most fatal. Bath has had one case only in Widcombe. How thankful we ought to be.

And on August 25 she wrote

Bristol continues in a dreadful state, 14 dead this morning in Temple Street. Bath as far as we know is free - the medical men never allow any disease to have a name fearing to alarm the visitors away from the place.⁷⁹

The cholera epidemic took its course, chiefly distributed along class lines, with helplessness and Christian hope the main feature of the accompanying sermons and texts. It spread into the neighbouring Somersetshire countryside, for example villages like Paulton, and by December 1832 it was gone, The Board of Health, in concert with others, gave thanks; among the medical men who had been on the Board were the physicians Carrick, 'rtchard, Wallis, Howell., Kentish, Bernard and Henry Hawes Pox, and the surgeons Richard Lowe, William Hetling and Richard Smith.

The perhaps unsurprising presence of Christian views in a range of public comment on the cholera epidemic of 1832 cannot be said to be the most striking feature of the professional medical debate over the nature of the disease. The most careful contemporary account of this matter was J.A. Symonds's On the progress and causes of cholera as it occurred in Bristol in 1832, delivered in 1834,⁸⁰ The most striking feature of Symonds's discussion is its scepticism. Symonds traced all the evidence that existed on the means of propagation, without finding it easy to draw any conclusion, particularly on the question of contagion. The first case had broken out in Harford's Court which faced the famously noxious River Frome: nonetheless, the disease spread with great virulence to areas near water and areas away from the water. Symonds went on to suggest that damp areas were favourable to the epidemic, and that contributions of effluvia must play some part: but once again, there were contradictions, since it did not attack the 'low and crowded' abode of the Irish and Marsh Street, until the last stages. Likewise, parallel streets were often unaffected; people returned to their neighbourhoods to die and did not spread it; not a single medical man was attacked with cholera, Symonds used this evidence to support his 'first proposition', I.e. that 'cholera may begin and propagate itself independently of any contagious property and that the property of communicability is frequently absent', On the other hand, scarcely a single

nurse or attendant escaped it, and passers by often smelt horrible things from contaminated households. These facts lent some support to the 'second proposition', that something did emanate from the body affected with cholera, both 'before and after dissolution'.

Felling has described Symonds's position as a form of 'contingent contagionism', with the inconclusive nature of the report to do with the scarcity of properly conducted post-mortems. A different way of putting this would be to see Symonds's as a divided position, a text that neither emphasised the moral nor the physical case, since both were inconclusive.

Both in his essay on cholera, and in his co-authored work of 1833, written with Andrew Carrick, on the 'Medical Topography of Bristol', Symonds was advancing, albeit unwittingly, a sociological account of the distribution of disease, one that substituted for any detailed explanation of disease causation.⁸¹ The 1833 essay was a virtual defence of the distinct environmental advantages of the 'hilly' parts of the city of Bristol, with its prospects and relatively clean water, as against the lower, river-bound world of malodorous contagion. It might well be said that the development of the (underexamined) genre of medical topography was an example of a disguised acceptance, on the part of early Victorian doctors, of the class basis of epidemic disease. In methodological terms, Symonds could not offer an account of the transmission of cholera that

satisfied even the simplest canons of scientific explanation. He necessarily proposes an environmentalist substitute, maintaining a -scepticism about moral and physical causal ascendancy.

Two other works particularly, both by J.C. Prichard, display this division of explanation in important ways, and suggest the historical existence of practising Christian physicians whose commitment was nonetheless to materialist accounts of natural phenomena, where that materialism was 'untouched' by the impinging Christian belief.

A striking example of this argument was Prichard's Review of the doctrine of a vital principle of 1829.⁸² This fairly well-known text was an example of the uses of division in contemporary scientific writing, since Prichard argued for a radical dualism, criticising the Hunterian idea of a vital principle and arguing throughout that the properties ascribed to this 'principle' are in fact properties of matter. Digestion, secretion, muscular contraction and animal heat were all discussed in this way. Prichard's discussion of muscular contraction had an aside against John Hunter: that Hunter accepted the existence of chemical action within the fibres (fibrin of the blood) but continued to insist that a 'vital principle' is at work within it. Again, while discussing the operations of the brain, Prichard made, the actions of memory, perception, phantasy, and dreaming dependent on the organic structure, while distancing the emotions, volition, judgement and

imagination **from** a totally dependent relationship. Indeed imagination **was seen** as involving the operations of the immaterial soul.

The purpose of Prichard's interesting text was to combine a strong materialism with an equally strong (if refined) teleological argument. The operations of harmony in nature, and the final purpose of the young seed sending up its branch and its radicle into the earth, these are no doubt (according to Prichard) supervised by the Operative Cause. But Prichard was determined not to let his argument collapse into either a universal vitalism or a Cudworthian Neo-Platonism. Material, non-vitalist explanations can coexist with a Christian teleology, and indeed, most do. Prichard pointed out how malleable a concept like the 'nisus formativus' of Blumenbach could be, ending up being co-opted by some distressing figures, such as Lamarckists or even Geoffroy St. Hilaire. This distaste for the promiscuous ease with which loose concepts of force might be used by undisciplined transmutationists can be felt strongly in Prichard's remarks on Erasmus Darwin, who had been - for figures like Thomas Beddoes - a powerful and original philosopher. Darwin's labile idea of appetency carried the ludicrous implication that men and toads could both be products of environmental and immanent forces; Prichard was determined to shun such speculation by dividing the issue into its discrete but necessary division of the materialist and the teleological. The Importance of the Vital Principle as a Prichardian text

was precisely that it showed no fear of admitting to organically-based explanation of phenomena since the confidence in the overall place of purpose remained quite as strong. 'Materialism' would therefore collapse between the two poles of the argument, down the fissure of the divided text.

Prichard as a practising physician, carried this dual commitment into everyday effect. Along with other members of the Infirmary staff, especially those, like Henry Riley, with some regard for the doctrines of the Paris school, Prichard was a firm believer in 'heroic therapy', and saw inflammation, usually depending on a plethoric state of the system, as the cause of almost all disease. In Crump's words, 'He attacked illness vigorously, with full doses of potent drugs such as mercury and digitalis, and ample bleeding, purging and administration of emetics 83 It also appears that counter-irritation techniques were equally 'heroic', with the use of blisters, setons and issues made by caustics or incision and suppuration fostered by peas or medicated beads. It is Crump again who alleges that one of Prichard's patients wrote 'To Doctors of all men alone,/ The name of mercy is not known'. ' 84

Certain other writings and pronouncements by Prichard lend support to the casting of him as an influential exponent of a 'divided' position, i.e. a firm regard for materialist (even sceptical) explanations that did not expel the ultimate commitment to Divine Existence. Prichard's

account of the epidemic fever that prevailed in Bristol in the years of 1817, 1818 and 1819 (published in 1820) supported the call for a fever hospital with a sympathetic case for contagionism of a modified kind. But contagion was never an exclusive cause: Prichard even fell back on certain Sydenhamian notions of predisposition.⁸⁵

But this work of Prichard's, valuable as it is for a glimpse into the size and workings of St. Peter's Hospital, was more important in its explicit enunciation of a theme that Prichard was going to enlarge on in later years: the denunciation, whether in regard to febrile or other disorders, of the legacy of the Scottish Schools of Cullen and Brown. The 'heroic methods' that Prichard favoured were bold attempts to do away with speculative absurdity without any loosening of an ultimate theological loyalty. Prichard's important statement, of July 1835, to the Provincial Medical and Surgical Association at Worcester, brought this critique to its head. a6

In ways that remind the reader of other texts of the 1830s that seek to cast all (or most) past efforts as erroneous (especially the quite different and more ambitious Principles of Geology of Charles Lyell),⁻⁸⁷ Prichard outline a terse history of medicine. He remark early on that 'it is no matter of surprise to find one of the soundest philosophers of the present age declaring in plain terms that medicine? considered as science, has scarcely made Any progress since the days of Hippocrates'.⁸⁸ The author referred to was Thomas Thomson (1773-1852), and

his 'History of the Royal Society of 1812'.⁸⁹ The central foolishness of the recent medical past, according to Prichard, was embodied in the vis medicatrix naturae of Dr. Cullen. Prichard straight-forwardly affiliated this to van Helmont's spiritus archaeus, but suggested that Cullen had gone even further (into error) than van Helmont, since Cullen's account of fever had explained part of the morbid actions by referring them to the 'relative or depressing' influence of an external cause, and the vis medicatrix was made to 'complete the result' by imposing a spasm on the extreme vessels and thus setting up the condition of the system termed fever, or pyrexia. The careful tones of Prichard's writing - and indeed his famously inaudible delivery - deliver the dialectical coup de grace: 'Yet this absurdity prevented not the general acception, and the long prevalence of the theory, against which Dr. Brown exerted his ridicule, and in opposition to which he created a system equally fantastical', 90

Prichard did not, in this example, dispense entirely with Cullen's medicine: his theory of haemorrhagy was acceptable (a theory of vascular determinations) partly because it chimed with Prichard's own tendency to monism, i.e. plethoric inflammation, underlying most diseases. And Broussais, for example, was seen by Prichard as requiring too much of his gastro-enteritic model.⁹¹ Prichard's ideological target was the semi-materialist principles of 'nature' or 'vitality' that appear in these texts, since these correctly beloni

either in material agencies or in the purposive teleology of the Divine Mind, not in some speculative mid-world. Of course for other writers - above all, phrenologists - it was Prichard himself who had not resolved the issue, either in his synopsis of current medical thinking or in his Vital Principle or his Treatise on diseases-of the nervous system of 1822. Prichard's own dualism was seen by such authors to be at odds with, for example, the craniological aspects of anthropological science. Seen in a different way - a medical-historical one - Prichard's refutation of the vis medicatrix naturae and its associated doctrines could be seen as a serious attempt to do away with an inexact Enlightenment idealism on behalf of a Christian dualism evenly divided between 'heroic' materialism and austere, rather remote (and often unargued) idealist teleology.

Prichard's Worcester address proposed certain ways forward: the study of the history of disease; the approach of technical investigation; necroscopy; and the observation of the effects produced by particular agents. With regard to nosography, praise was reserved for advances by Willan, Bateman, Alibert and Rayer (with respect to diseases of the skin); the technical advances effected by Laennec and Auenbrugger were noted, alongside advances by Forbes, Hastings, Clark and especially Louis on 'tubercular phthisis; notice was given of the career of fellow Bristolian Richard Bright, in approving terms: and in the area of mental

disease, the leading figures were Pinel, Esquirol, Georget and Foville. Foville was also given approval as a student of the physiology and pathology of the nervous system.'

On certain matters - the opposition by the Italian Bellingeri to Bell and Magendie on the spinal chord, or Carswell's discussion of the blood as the site of malignant disease - all the evidence was not yet in. Further statistical work, in the tradition of Quetelet and Guerry, such as that on pulmonary disorders by James Clark, would be welcomed.

Prichard, like his relative J.B. Estlin, made, short shrift of homeopathy, which he considered misguided and dangerous. Like Estlin too, Prichard had taken up a position against the phrenologists, with a less overt class hostility, but basing his argument on the exaggerated claims for structure/function correlation **made** by phrenology. On the question **of the effects produced** by particular **agents**, **he discussed the use made of kreosote, for example, in the treatment of diabetes by Professor Berndt of Greifswald, a practice subsequently** imitated by John Elliotson.

Prichard briefly discussed the contagion question (which he claimed better treated by Dr. W. Henry as it appeared in the BAAS report for 1834) and, as one might expect, said that it was impossible to decide whether cholera is contagious, in any simple way, He said also that some states, for example Austria, have introduced absurd restrictions on the movement of commerce and trade. For those seeking clarification of a confused issue# solace can be found in the work of

Dr. Hancock on the laws of pestilence, and the account of cholera in Bristol by Dr, Symonds, discussed earlier.

Prichard's Address cannot be absorbed into any easily discernible tradition of medical alignments, such as the 'Paris school of medicine' or the proposal that this saw a 'revolution' in pathologico-anatomical methods that marked a complete break with the Enlightenment.^{9.2} Prichard obviously favoured the developments that he described, all of them instrumental, or statistical, even 'scientific'. But as with the vital principle, the crucial point was to advance the case for interventionist medicine while not jeopardising religious faith. He makes this explicit at the end of his address, by pointing out that many of the ablest defenders of the religious basis of life were members of the medical profession. 93

If there is an 'interest' at work in these writings, and others like them, it has to be related to the growing social status of some parts of the medical profession, as expressed in the institutional changes mentioned previously. Heroic methods, coupled with Christian belief, have a claim to being 'interest' related, and especially if amended by one further dimension.

Bristol's social elite (and its medical men) undoubtedly placed great stress on the need for a permanently moralising community. One possibility, discussed for example by Ackerknecht and more speculatively by Cooter - is that the categories and arguments deployed by medical men

in the **issues** such as the cholera epidemic will reflect social or ideological priorities. Physicians of a liberal temper might favour anti-contagionism since contagionist readings of situations would be on the side of social enclosure and restriction. 94

Another historical possibility is that no such easy account can be given of views of contagionist or anti-contagionist polemics, since there are too many examples of individual writers who contradict such an account. Prichard for example could not have been more politically conservative, but he regarded some of the **measures** taken over quarantine - for example in Austria - as too severe, leading to 'absurd' restrictions **on trade and commerce**. The crucial point is that scepticism could co-exist with a firm Christian moral **sense**, since the methodological position taken in these writings (however disingenuous) was that the truths of science were not arrived at through the a priori commitment to the higher truths of Christianity. As will be discussed later, this 'liberal' idea could even lead later writers to accept certain forms of evolutionary argument, since these too were **not seen as** jeopardising a higher faith. The physicians of Bristol's elite were undoubtedly committed to moralisation through the obvious institutions, from Bible society to reading society to Mechanics Institute. But it does not follow that the categories **of medical analysis** would be bound to be suffused with doctrinaire commitments, whether political

or religious. The belief that science and religion would proceed to reveal their respective truths independently **helps to explain the dualities in some of the above texts, and it is unnecessary to seek an explanatory amalgamation based on political readings or a doctrine of natural symbols. None of the tensions and contradictions of nineteenth century medical practice in matters such as fever or cholera are illuminated by doing this.**

This desire to separate 'facts' from 'belief', whether tinged with Baconian rationalisation, or a 'two truths' theory, or **read as a deliberate** 'positivist' mystification, may indeed be an ideological **ruse, on the** part of emergent bourgeois physicians. But it is important to see this **paradox as** one that was believed in by historical actors, since the contradictions **and tensions** that this **dualism sets** up were vital aspects of the science/religion alliance of the nineteenth century Christian intelligentsia. Neither the politically **based account**, nor the view that, for example, anti-contagionists became policemen of the atmosphere, as one of the appropriated parts of Nature that passed into the hands of ambitious physicians, is borne out in the Bristol **example** of 1832. Theoretically, medical **men expressed** a multifaceted scepticism. Practically, some of them avoided the issue, Indeed avoided intervention. The only common moral language above all In the cholera **case** was the resort to Christian remarks on the hope that the epidemic would **cease**, and that social solidarity would **Increase** through the activities of the Board of Health.

One place where the Idea of a moralising community was given verbal expression, and which gives an insight into the social basis of a common language of concern, was the dispute over the new Poor Law of 1834. Because of the peculiar

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legal status of Bristol's Corporation of the Poor, the reforms of 1834 were not put into effect in the city of Bristol during the 1830s. Certain other rural parishes - this included Clifton and some of the out-parishes - were amalgamated, as was the parish of Bedminster, with several other parishes in Somerset. But the Corporation of the Poor, and St. Peter's Hospital, were not involved in these other amalgamations. It must have been from the experience of some of these other unions that dislike of the activities in the new circumstances arose. Lant Carpenter was known to have doubts about these novelties, but of more interest is the opposition (and the language with which it was expressed) of J.C. Prichard. This statement takes its place with other contemporary medical opposition to the new regime, and evokes nothing less than a society of Christian patriarchy under threat from the bourgeois utilitarianism that had engineered the poor law reforms. Prichard made his remarks at the 1840 meeting of the newly created Bristol branch of the Provincial Medical Association; '97

We cannot condone the methods of financing of the New Poor Law Unions, where young doctors anxious to promote their own pecuniary states, work for small

sums and who therefore tend not to buy the best **of drugs and medical currency available. The poor are in fact farmed out to these Unions to the most advantageous bidders under circumstances which** hold out the strongest temptations to neglect of duty. I am not called upon to consider the results of this proceeding in regard to the unfortunate beings committed to our care, or to contrast the liberality of former generations which made provision for the cure of souls and for the support of an apostolical church, by the patriarchal gift of tenths, with the sordid penury of the present age, which confides the infirm bodies of the poor to hands whose principal qualification for that trust **is greediness to** undertake what they cannot, on the conditions offered, faithfully perform. A so-called utilitarian age whose scarcely disguised principle is to crush out of existence or drive out from the table of nature those who have not the strength and energy to scramble for their **places.**

Not until 1844, when **an amending statute was passed** empowering further combination **of unions** for the auditing of accounts, was the position of privileged bodies, like Bristol's Incorporation of the Poor, **endangered, By** January 1857, the separate **existence** of the 'incorporation' was virtually abolished by the concession to the state's

officials that accounts should be rendered: otherwise the recovery of £23,157, illegally distributed, was to be retrieved by individual levies on members of the corporation. The 'incorporation' became an 'ordinary board of guardians', in the words of John Latimer, complete with promises to local **ratepayers to save £4000 a year.⁹⁸**

The eclecticism that may have been part of the system of medical philanthropy of eighteenth century Bristol had certainly changed its nature, indeed disappeared, by the 1830s and 1840s. In the affairs of Bristol Infirmary, for example, the transition towards a generalised conservatism, based on elite religious affiliations, paralleled the history of local scientific culture. Ambitious physicians committed themselves to heroic therapies, or approved a higher social profile for themselves through, for example, the Provincial Medical Surgical Association. And the teaching of future **doctors was** altered noticeably by the **events** of the 1830s. It was within the language of Christian morality that the new 'common front' was established, a language that was markedly less eclectic in denominational loyalties than had been the case previously. 'Psychiatry' (as theorised by J.C. Prichard and practised by E.L. 'ox1 could be said to be part of this moralising idea, and 'science', it was assumed, would always be the Independent handmaid of an austere, evangelical religious commitment.

These theoretical developments took place within a **profession** that **was noticeably altering its formal** organisation, especially in the **area** of medical education. The 1815 Apothecaries Act, the establishment of the Bristol Medical School, the restoration of faculty presence on the governing committee of the Bristol Infirmary, all these **presage a new, albeit overcrowded, era. Seen alongside** scientific activity, the BAAS visit of 1836, and municipal reform in the mid-1830s, the history of hospital medicine and administration form part of the construction of civic reform that manifested itself in other parts of local life.

Footnotes to Chapter 6

1. **The fullest account of the city in its most ascendant years, at least in commercial terms and in comparison with London, remains John Latimer's Annals of Bristol in the eighteenth century, of 1893.**
2. At the time that the **research** for this chapter was conducted, the Memoirs were still housed in the boardroom of the Bristol Royal Infirmary. They were subsequently moved to the archives office of Bristol Corporation.
3. See, inter alia, D. Owen, English Philanthropy 1660-1960, Cambridge, Mass., 1965: B. Rodgers, Cloak of Charity: Studies in eighteenth century philanthropy, London, 1949: R.W. Malcolmson, Popular Recreations in English Society 1700-1850, Cambridge, 1973.
4. **G. Munro** Smith, A History of the Bristol Royal Infirmary, Bristol and London, 1917, page 30.
5. Ibid., **(4)**, **page 143.**
6. Roy Porter, English Society in the eighteenth century, London, 1982, page 309.
7. My attention was drawn to the example of William Dyer by the work of Jonathan Barry, and I am indebted to him for his insights.
8. It is hard to imagine a work with such an ambitious title being read by the elite of the city in the closing years of the eighteenth century, let alone the early nineteenth.
9. See the entry under 'scientists in the Dictionary of the History of Science edited by **W.F. Bynum, E.J. Browne and R.S. Porter**, London, 1981.

10. J.B. **de Mainauduc**, The Lectures ... part the first, London, 1798. An account of de Mainauduc's practice, that also **expresses** scepticism about much of it can be found in George Winter, Animal magnetism, history of; its origin, progress and present state, its principles and secrets displayed as delivered by the late Dr. Memainauduc Lsic/, Bristol 1801.
11. See the list 'Students to Doctor J.B. de Mainauduc's Science' held at the Library of the Royal College of Surgeons, Lincoln's Inn Fields, London, (unnumbered).
12. On Sibly, see Allen G. Debus, 'Scientific truth and occult tradition: the medical world of Ebenezer Sibly (1751-1799)', Medical History, 1982, 26, 259-278.
13. See Munro Smith, op.cit., (4).
14. The course of this dispute can be followed in the records of the Bristol Royal Infirmary, housed in the Corporation Archives Office, index number 35893, General Board Books, commencing January 1800. The annual 'state of the Infirmary' printed reports are also useful for clarifying the views of the House Committee.
15. See for example the 'State of the Infirmary' report for 1810.
16. For a list of the surgeons In the city at this time, see Mathew's Bristol Directory. For example, in 1826, the directory listed-95 (surgeons, apothecaries etc'. In his July 1833 Address to the Provincial Medical and Furgical Association, the physician Andrew Carrick cited the existence of surgeon's apprentices as the

chief stumbling block in preventing the possibility
of all-round medical education for young doctors.

17. For Wallis **see Munro** Smith, op.cit., (4), 301-2,
441-4.
18. **Smith, Memoirs, 8, page 645.**
19. I.S.L. Loudon, 'A doctor's cash book; the economy of
 general practice in the 1830s', Medical History,
1983, 27, 249-268.
20. Ibid., 258.
21. Munro Smith, op.cit., (4), page 308. This was in fact
 the quoted opinion of Augustin Prichard.
22. **For T.W. Dyer, see Munro** Smith, op.cit., (4), 171-172.
23. The Compendium was one of the few products of Bristol's
 medical men at this time to receive attention as a book
of practical utility.
24. This is the case not merely because of the small amount
 of attention given to the patient, from any point of
 view, in the work of Munro Smith. The 'State of the
 infirmary' reports are also administrative accounts of
 the hospital's yearly activities.
25. This table is reproduced from Munro Smith, op.cit.,
(4), 89.
26. I.S.L. Loudon, 'Leg ulcers in the eighteenth and early
 nineteenth centuries', Journal of the Royal College
of General Practitioners, 1981, 31, 263-273.
- 27, See Munro SIIUth, op.cit.,, (4I, chapter 12.

28. Ibid. , 149-150.
29. This information is drawn from the Smith Memoirs , volume 11, pages 750 to 765 , which is mostly concerned with the controversy over the exclusion of the faculty from the House Committee . A letter of 15 November 1824, from Husenbeth, gives details of the renewed dependence on interest from capital stock rather than on sources such as church collections or musical performances.
30. A. Carrick, On the Hotwells Water, Bristol, 1797.
31. J.V. Pickstone and S.V.F. Butler , 'The politics of medicine in Manchester, 1788-1792: hospital reform and public health services in the early industrial city', Medical History, 1984, 28, 227-249.
32. A point made by Jonathan Barry in his unpublished paper 'Mr. Dyer's diary: medicine and religion in Bristol in the eighteenth century', delivered to the seminar on the history of the patient in the history of medicine, Wellcome Institute, London, in June 1983.
33. See Munro Smith, op.cit. , (4), 118.
34. See Smith Memoirs , under Abraham Ludlow, volume 4, 376-390.
35. Rules of the Bristol, Dispensary, contained in the Smith Memoirs, 2, 682.
36. Smith, Memoirs , on the Bristol Dispensary, 2, 686 onwards.

37. These printed sheets, which condense the annual activities of the dispensary are contained in the Smith Memoirs, volume 3.
38. In addition to this information, in volume 2, volume 14 of the Smith Memoirs contains an accumulative list of all those admitted to the dispensary from 1776 to 1836 inclusive.
39. Some evidence for the strength of this connexion can be deduced from the fact that the Infirmary and St. Peter's were known as the upper and lower houses, because of the established route between them.
40. This list was routinely printed in the local guides and directories, and appears at random in the volumes of the Smith Memoirs mentioned above.
41. The information on the Clifton Dispensary used here comes from the Smith Memoirs, volume 11, page 561 onwards.
42. Smith, Memoirs, 11, 562.
43. A small cache of separate materials on the Clifton Dispensary, distinct from the Smith Memoirs, is deposited with the Bristol Corporation Archives Office, number 16071 (I) and (21. The rules were drawn up in December 1812.
44. See the annual report for the Clifton Dispensary, the twentieth, for 1832, In these circumstances, the poor were allowed to come for relief without tickets. 821 individuals were 'seen% in this way.

45. C. Chisholm, 'On the statistical pathology of Bristol **and of Clifton, Gloucestershire**', Edinburgh Medical and Surgical Journal, 1817, **13**, 265-300. Chisholm **reiterated his view that environmental 'filth' was not of itself a cause of 'typhus infection':** he argued for a specific typhus virus, the exact composition of which he did not know.
46. I.S.L. Loudon, 'The origins and growth of the dispensary movement in England', Bulletin of the History of Medicine, 1981, 55, (3) 322-342. See especially footnote 31.
47. Ibid., Table 3, page 337.
48. John Latimer, Annals of Bristol in the nineteenth century, Bristol, 1887, page 144.
49. These figures are drawn from J.O. Symes, A Short History of the Bristol General Hospital, Bristol, 1932, page 17. **Symes gives a useful account** of the early years of this institution.
50. W.D. Rolfe, the consulting accoucheur, had also been man-midwife and apothecary to the Bristol Dispensary. Materials - though few - on the Lying-In Institution **can be found** in the Smith Memoirs, volume 14.
51. The main source for this section on J,B, Estlin is volume 7 of the Smith Memoirs, 310-577, Material on Estlin is also to be found in the 'Estlin Collection' kept at Bristol Central Library, College Green, Bristol.
52. Munro Smith, opt.,, C4), page 259.

53. The annual report is inserted, along with others from the Frogmore Street Dispensary in the section on Estlin in the Smith Memoirs: there is a run of annual reports from 1813 to 1839.
54. Annual report of the Dispensary for the cure of **diseases** of the eye, 1821-22, page 2.
55. Annual report, 1828-29, pages 2-3.
56. Annual report, 1838-39, pages 1-3.
57. J.B. Estlin, Remarks on Mesmerism in 1845: being a part of the President' s address , delivered at the fourth annual meeting of the Bath and Bristol branch of the Provincial Medical and Surgical Association held at Bristol, June 27, 1845, London, 1845.
58. Estlin is quoting, with approval, from the London and Edinburgh Monthly Journal of Medical Science. He was particularly displeased **with mesmeric claims since** they aspired to the condition **of miracles**, the truths of which Estlin felt 'proved' the Divine mission of Christ.
59. **Reverend William James**, Memoir of John Bishop Estlin, Esq., F.L.S., F.R.C.S.,: from the Christian Reformer, August 1855, London, 1855.
60. G. Parker, Schola Medicinae Bristol, Bristol, 1933.
Parker also drew up a typescript MS of 'Lists of medical men in Bristol' in 1925 which is kept in the Bristol Medical School Library, but the information he gives on each is small; see also A.Prichard, 'The Bristol Medical School', Bristol Medico-Chirurgical

Journal, 1892, 10, 264-66.

61. The biographical information on Bowles comes from the Smith Memoirs, volume 4, and from Munro Smith, op.cit., (4)f 186-88.
62. Ibid., page 194.
63. See G. Parker, op.cit., (60), page 6. The period that students spent in the metropolis was often cited as a dangerous time, with young men exposed to the corrupting influences of the city.
64. M. Pelling, Cholera, Fever and English Medicine 1825-1865, Oxford, 1978, page 158.
65. J.A. Symonds, Miscellanies: with an introductory memoir by his son, London, 1871, xi. In the introductory memoir Symonds's son gives a brief account of his father's early career, including this footnote about the political warning given to him 'by an older physician than himself'.
66. The two Smiths formed a small dynasty of robust Tory **surgeons**; Henry Daniel, for example, was a pupil of Richard Smith Senior, and always pressed the case for proper recognition of surgical training in provincial hospitals. **He was** a firm Tory, being a relation of Thomas Daniel, a virtual Tory party manager for the city of Bristol, in the 1820-1840 period. Family continuities abounded in Bristol; **for example** the Edinburgh trained surgeon Henry Goldwyer followed W. H. Goldwyer as a surgeon at the Eye Hospital.

67. For a short biography of Augustin Prichard, see
Munro Smith, op.cit (4) 471-473. Among other interests
that indicated a respect for the German tradition of
medicine and natural history, Prichard translated
parts of Alexander von Humboldt's Kosmos, London,
1845-8. See also J.G. Swayne et al: 'In Memoriam
Augustin Prichard', Bristol Medico-chirurgical Journal,
1898, 16, page I.
68. P.S. Brown, 'The providers of medical treatment in
mid-nineteenth century Bristol', Medical History, 1980,
24, 297-314.
69. P.S. Brown, 'Herbalists and medical botanists in mid-
nineteenth century Britain with special reference to
Bristol', Medical History, 1982, 26, 405-420.
70. See Brown, op.cit., (68), page 310, table 5.
71. See Pelling, op.cit., (64), 162-3.
72. J.M. Harrison, The crowd in Bristol 1790-1835, Univers-
ity of Cambridge Ph.D. thesis, 1983, page 77, footnote
132. Harrison is quoting from a letter from E.F. Fox
to F.F. Fox dated June 4 1872, who alleged that Edward
Long Fox felt that his advocacy in the Bridge Riots
'prejudiced his Interests as a medical man and created
enemies for life', It also appears that Edward Long
**Fox thought Tom Paine thighly seditious'. Harrison's source is a
manuscript in the Bristol Reference Library, 13, 13064.**
- 73.- On this see William Ll, Parry-Jones, The Trade in
Lunacy, London, 1972; Andrew Scull, Museums of Madness,
London, 1979.

74. E.L. Fox, Surmises respecting the cause and nature of cholera, Bristol, 1831, **see pages** 4, and 21-22.
75. This makes some of Fox's account strangely closer to traditional 'evangelical' views on the visitation of cholera, as expounded for example by the Reverend Vaughan Thomas in Oxford in 1832. See R.J. Morris, 'Religion and Medicine: the cholera pamphlets of Oxford, 1832, 1849 and 1854', Medical History, 1975, 19, 256-270. Thomas wrote a pamphlet extolling the virtues of a generous gentry and the merits of the old Poor Law: this may distinguish him from Fox, but the latter's mixture of moral and physical arguments is nonetheless similar to arguments like that of clerical authors on the subject.
76. Among the large number of studies on measures taken to attempt to deal with cholera in Britain, see especially R.J. Morris, Cholera 1832, London, 1976; M. Durey, 'Medical elites, the general practitioner and patient power in Britain during the cholera epidemic of 1831-2', in Metropolis and Province, London, 1983, 257-278; N. Longmate, King Cholera, London, 1966; A.Gatherer, 'A Soclo-Medical Study of the First Cholera Epidemic in Great Britain, 1831-2', University of Aberdeen D,M, dissertation, 1960. M. Durey has also published The Return of the Plague; British society and the cholera 1831-2, Dublin, 1979.

77. Latimer, Annals, op.cit., (48), page 187.
78. These are the figures given by Latimer, whereas those that appear in the Smith Memoirs, volume 13, pps 240-265 give the figures for October 6th as 1515 cases with 582 casualties. The final figure for deaths - 584 - does seem agreed upon as correct.
79. Both letters, numbered 41 and 42, come from the Rylands English MSS, 1196, Wadsworth Papers, in the John Rylands University Library in Manchester. I am grateful to J.V. Pickstone for this reference.
80. Symonds delivered this paper to the annual meeting of the Provincial Medical and Surgical Association, and it was printed in their Transactions the following year, 1835, pps. 170-193.
81. Andrew Carrick and J.A. Symonds, 'Medical Topography of Bristol', Transactionsof the Provincial Medical and Surgical Association, 1834, 2, 148-80. The Association had 747 members in the year 1834.
82. J.C. Prichard, Review of the doctrine of a vital principl, 1829. There is a discussion of Prichard's text in W.F. Bynum, 'Time's noblest offspring; the problem of man in the British natural historical sciences', Cambridge University Ph.D. thesis, 1974, 215-224.
83. T.O. Crump, 'Theory and practice in psych.atxy; the case of James Cowles Prichard, M.D., F.R.S., (1786-1848)', Bulletin for the Society of the Social History of Medicine, 1978, 22, 2-5.

84. Ibid. , page 4.
85. J.C. Prichard, A history of the epidemic fever which prevailed in Bristol during the years 1817, 1818 and 1819 , London, 1820. Prichard pointed out that his account, based on the reports of St. Peter 's Hospital and the Infirmary, showed that Bristol Infirmary's rule about not taking fever cases was waived - at the physician's behest - during the time of the epidemic. 2213 individuals received institutional care, at either the Infirmary, the Dispensary or St. Peter 's in the three years. Many came to Bristol from some distance and arrived near death. Elisabeth and Roger Hale, case numbers 63 and 64, came from Chepstow , Monmouthshire, sent by the parish officers with a walking pass. Roger Hale died shortly thereafter in St. Peter's Hospital.
86. J.C. Prichard, 'An address delivered at the third anniversary meeting of the Provincial Medical and Surgical Association, July 23 1835'. reprinted in the Association's Transactions, 1836, 4, 1-54.
87. Sir Charles Lyell's remarkable attempt to present the history of geology as the history (until himself) of =jor errors Is discussed in R.S. Porter, 'Charles Lyell and the principles of the history of geology', British Journal for the History of Science , 1976, 91103.

88.	J.C. Prichard, <u>Address</u> , <u>op.cit.</u> , (86), page 5.
89.	T.Thomson , <u>A History of the Royal Society</u> , London, 1812.

Thomson took his history of the society up to the end of the eighteenth century. His best known book was A System of Chemistry, first published in 1802 and in a two-volume seventh edition by 1831. Thomson was a strong defender of Dalton's atomic theory.

90. J.C. Prichard, Address, 2p.cit., (86). 4-5.

91. J.C. Prichard, Address, op.cit., (86), 8-9. Prichard praised Broussais for drawing the attention of medical writers to the importance of the intestinal tube in disease states; but found him dogmatic and insufficiently Baconian (or inductive) when making his larger claims, for example, that all idiopathic fevers are related to gastro-enteritis. The doubts about Broussais expressed by Louis and Andral appear to have Prichard's approval. Andral was also admired by Dr. E. Barlow of Bath.

92. The most ambitious attempt to discuss this revolution is M. Foucault, The Birth of the Clinic, London, 1973. See also E.H. Ackerknecht, Medicine at the Paris Hospital 1794-1848, Baltimore, 1967.

93. J.C. Prichard, Address, op.cit., (86), page 54.

94. See E.H. Ackerknecht, 'Anticontagionism between 1821 and 1867', Bulletin of the History of Medicine, 1948, 22, 562-593; and R. Cooter, 'Anticontagionism and history's medical record', in P.Wright and A. Treacher, (eds). The Problem of Medical Knowledge, Edinburgh, 1982, 87-108.

95. **It is precisely this admission of ignorance, in**
 writers such as Chisholm or Symonds, that distinguished
 the discussion on typhus, or cholera, in the 1830s
from the writings of a man like William Budd in the
late 1840s. The later writers, employing microscopical
techniques, or analogies with other diseases, such as
 smallpox, do not have **to be seen** as 'scientific' for
the differences between them and their predecessors
 to be upheld.
- 96.. A very useful discussion of the general nature of the
 opposition to the introduction of the New Poor Law
 can be found in Nicholas C. Edsall, The anti-Poor Law
movement 1834-44, Manchester and New Jersey, 1971.
 The Bristolian opposition to the reform - which has
 not been properly studied - is undoubtedly related
 to the unusual structure of the institutions for
 poor relief that existed in the city.
97. This address is to be found, in rather a fragmentary
 form, in the section of pieces on Prichard kept by
 Richard Smith in the Memoirs, volume 11, 502-690,p.622.
 The expression 'the patriarchal gift of tenths' is
 striking in this passage.
98. John Latimer, Annals, op.cit., (48), 351-352.

Chapter 7

The era of political reform in the 1830s was accompanied by certain developments in the intellectual life of Bristol that repay attention: these may be characterised as the attempt, by younger men than those associated with the early years of the Bristol Institution, to incorporate 'progressive' aspects of contemporary philosophical discussion - principles of uniformity, or natural law, or transcendental anatomy - into an essentially conservative schema that retained its allegiance to orthodox Christianity.¹ And the activities of one such individual, the Paris-trained physician Henry Riley, can best be seen as part of a desire to promote scientific discoveries and initiatives as a civic ideal that would reflect the achievements of the era of reform in a responsible way.²

The work of William Benjamin Carpenter is perhaps the most notable example of a younger man, born in a local family, attempting to combine, in his early work of the 1830s, a view of natural law that could be reconciled with theological beliefs such as a modified (non-Paleyan) argument for design. Even when criticizing Huxley's inductive method, as he did in an essay in the British and Foreign Medical Review for 1838, Carpenter did not wish his commitment to lawful uniformitarianism to lead to a materialistic transmutationism.⁴ The years 1838-1840 were not easy for Carpenter, who was lecturing at the Bristol Medical School for small sums. When his Principles of general and comparative physiology, published in 1839, was attacked for materialist tendencies, Carpenter felt vulnerable,

and solicited support **from** Sir John Herschel, Prichard, Conybeare, **Baden** Powell, J. Pye Smith and J. **S. Henslow**, **Some of these** writers testified to the **absence of any** such tendencies in the Principles, and argued that the **expression** of the powers of the Deity through natural law **was not**, ipso facto, a materialist belief. Abetted by the Unitarian background of its author, Carpenter's Principles **was an example** of the combination of progressive naturalism mixed with religious belief that characterised other work from Bristol writers.⁵ The curriculum of Bristol College, where Carpenter also worked, could be said to epitomise the attempt to balance a progressive pedagogical ideal with respect for the restraints that liberal Anglicanism required. The wobble in the early career of W.B. Carpenter illustrates the mild tension in some of the work of Bristol's younger intelligentsia. Carpenter, for example, held on at Bristol College with the help of Prichard and Conybeare, but was not even considered as a candidate for the Professorship of the Institutes of Medicine at Edinburgh in 1842 because the Lord Provost and Town Council objected to his Unitarianism.⁶ But the espousal of 'developmentalist' views might come from the unlikelyst sourcesf contradictI any facile equation of natural law concerns with an aggressive bourgeoisie, for example. In the Bristol case, the anti-Peelite, exotic reactionary Sir Richard Vyvyan 61800-18791 was both an M.P. for the city, representing its anti-progressive Tories, and also author of

strange scientific speculations that resemble the later work of Robert Chambers and his Vestiges of the Natural History of Creation of 1844. Vyvyan was not afraid to use phrenology, to use Lamarckianism, to sustain his idea of cosmic progressionism.⁷

More concrete, and more illustrative of the civic ideals of the 1830s, is the work of Henry Riley. In 1832, Riley was elected to the staff of St. Peter's Hospital after finishing his training in Paris. In the same year, in December, he married Cecilia Daniel, daughter of the Tory surgeon Henry Daniel (1783-1859). In May 1834, Riley was elected a physician to the Infirmary, defeating, inter alia, J.A. Symonds. As has already been noted, he was active in medical education as well as medical social life, utilising 'heroic' therapy as well as appropriate symbols of a Parisian training, such as the stethoscope. Just as importantly, he took on civic duties in the post-1835 context, being Chairman to the committee to establish the Bristol and Clifton subscription baths in 1838, and provisional secretary of the Bristol Zoological Society in 1835 as well as the Bristol and Clifton Royal Horticultural Society, seeing the latter as contributing to the solution to food shortages that Sir Robert Peel had been investigating at the time,⁸ Riley, in the elections from 1832 to 1841, revealed a firm commitment to conservatism. In 1832 he voted for the conservative Vyvyan and the pro-slavery Whig, J.E. Baillie, (The Unitarian Lant Carpenter for example plumped for the pro-Reform liberal Edward Protheroe). In 1834 Riley plumped for P.J. Miles, who was proposed by

Thomas Daniel, orchestrator of local Tory interests, as a candidate with mercantile interests at heart and who was 'a known advocate of the same political principles as have governed Sir Richard Vyvyan'. In 1841, Riley again voted for the conservative double-ticket of Miles/Fripp, refusing the attractions of the Liberal F.H.H. Berkeley. He repeated this in 1847, a year when the museum curator and scientist Samuel Stutchbury plumped for Berkeley, the Free Trade Liberal, as did the physician J.A. Symonds.⁹

But Riley wanted to combine scientific 'forward thinking' with social conservatism. He was the first person in the scientific world of Bath and Bristol to have left a proper account of his interests in the philosophical anatomy of Geoffroy St. Hilaire, which he imbibed in Paris at a time when the work of Geoffroy, Blainville and Serres was receiving its strongest formulation. Organic unity, serial recapitulation and the animal chain were seen as mutually reinforcing parts of an energetic advance on Cuvier¹⁰

Riley favoured the moderate Provincial Medical and Surgical Association (whereas fiercer transcendentalists, such as R.E. Grant and R.D. Grainger supported the more extremist British Medical Association); he was well-connected with local Tory society; he was not a liberal, let alone a radical, But Riley wanted institutional change, both at the Medical School and in the kinds of anatomy teaching that it offered, and his case is instructive for that reason, emphasizing the moderation of this example of the bourgeois reforms of the period. When combating the stipulation that

students wishing to pass the examination of the College of Surgeons should pass six months in a London hospital, provincial medical men, chemists and teachers could discover professional interests that transcended political differences. Indeed, there was all-party opposition (and a petition) entreating Warburton's commissioners in 1834 to abolish 'the invidious distinction between the hospital teachers in the metropolis and those in the provinces.'¹² Provincial teachers united in opposition to the College's monopolistic regulations, and this meant the virtual absence of the kinds of political splits that figured in contemporary medical circles in London.¹³

Riley began his lecturing **career in** Bristol by collaborating with the Edinburgh and Cambridge educated George Wallis (? - 1872). In fact Riley and Wallis were both caught in the act of grave-robbing in Brislington churchyard in February 1828. Riley was fined £ **6, as was** Wallis, and less than three weeks later, the magistrate who fined them, Thomas Hassell, backed. Wallis in his, successful election to the staff of Bristol Infirmary. In 1827 and 1828, Wallis and Riley lectured on anatomy and physiology, to classes of between 20 and 25. Wallis's lecture course of 1825 on comparative anatomy was 'aleyan, and strongly anti-phrenological. In that sense, Riley was to break with one kind of tradition of anatomy teaching, but not in order to initiate a materialist alternative. Nonetheless, **he was** keen to give the French writers a better press than did Wallis or the Dowlais iron-master G.T. Clark, who berated Geoffroy, in the West of

England Journal, for drawing conclusions 'of the most gratuitous absurdity', 14

Riley, and to some extent J.A. Symonds, had different sympathies. Symonds had studied at Edinburgh where Geoffroy's disciple Robert Knox had promoted French anatomy. To the end of his life Symonds was to regard 'the transcendental anatomy of Oken, and Serres and St. Hilaire' as one of the major achievements of science.¹⁵ W.B. Carpenter was influenced by the Geoffroyan R.E. Grant at London University in 1834-35, which contributed to his views on the unity of function.¹⁶ Henry Riley's work on these lines is less well known than Carpenter's, and his lectures to the Bristol Institution, particularly the series on 'Zoological and Philosophical Anatomy', delivered in March 1831, are good examples of a certain provincial English translation of French Ideas. And in April and May 1832, Riley lectured on reptiles, a class that 'afforded more varietie _ and anomalies of confirmation Iof transcendental anatomy/ than any other'.¹⁷ And finally, in 1833, Riley delivered another general course on 'Comparative Anatomy and the philosophy of zoology' in eleven lectures. 18

Newspaper reports, of the 1832 and 1833 courses especially, indicate that the lectures were technically proficient and **the result of Parisian enthusiasm.** Riley systematically applied the transcendental doctrines of Geoffroy, Blainville,¹⁹ and Serres to the great divisions of Vertebrate and Invertebrate (he accepted Lamarck's dichotomy).²⁰ He also

included in his transcendental explanation the 'law of correlation' by which Cuvier had claimed to be able to reconstruct an animal from a single bone. Yet Riley undoubtedly knew of Blainville's scepticism of Cuvier's claim, and he accepted that beyond allowing us to correlate, say, digestive tracts and dentitions in herbivorous and carnivorous mammals the law had its limitations. Given an anomalous saurian like Zchthyosaurus 'it would be impossible for a person to reform the whole animal from any one portion of it!'.²¹

So Riley was no slavish Cuvierian; quite the reverse, the system he proffered was pre-eminently Geoffroyan. Riley's programme, as he set it out in his 1833 Prospectus, was an unCuvierian attempt 'To reduce each organ in the entire animal series, to unity of system in its composition and arrangement'.²² He listed the great transcendental laws: the 'Theory of Analogies', exemplified by Geoffroy's paradigm, the identification of the piscine pre-opercular plates in fishes as the homologues of the mammalian ear ossicles;²³ the 'Principle of Connexions', which postulated an invariant relationship between bones (the humerus always articulated with the scapula, and so on); and 'Law of Balancing of Organs', which recognises that excessive development in one organ is compensated for by deficiency in another - thus man's cranium has grown at the expense of his jaws, whereas in the chimpanzee the jaw/cranium ratio is larger, while in the crocodile the snout is huge and the

brain diminutive. This last 'law' Riley found 'was of the most extensive applicability, enabling us to understand the difference of form and function of analogous parts', and he resorted to it repeatedly in the lectures.²⁴ He also accepted with German Nature-philosophers that an 'identity of elements' extended, not merely between the homologous structures in different organisms, but to repetitive structures in the same body. The shoulder and pelvis were themselves homologous, as were the fore and hind limbs.²⁵ The vertebrae were all homologous, each being composed of nine elements, differentially developed according to the law of compensation,²⁶ and this serial homology extended into the cranium, which was itself composed of three vertebrae whose elements were disproportionately modified.²⁷

Some transcendental laws were of particular use, noticeably the concept of 'eccentric development' (i.e. the belief, supported by Serres and Etienne and Isidore Geoffroy, that embryological growth proceeds from the periphery to the centre, that is from the nerves and blood vessels to the brain and heart). He used this, not only to explain malformations like hare lip and spina bifida - in which growth had ceased before a central join could be affected - but to elucidate Geoffroy's production of 'Imonster\$', foetal throwbacks frozen at some lower developmental level.²⁸ This mode of explanation itself depended upon the non-Cuvierian axioms of recapitulation and taxonomic continuity.²⁹ This cluster of concepts, so loathed

by Cuvier, was constantly **emphasised** by Riley. Admittedly, he insisted that such foetal **states were** only analogous to the lower adult **forms**, rather than actually identical with then **as some German** morphologists **assumed**.³⁰ Thus he avoided the awful problem shortly to be raised by Owen, in his Hunterian Lectures, of the loss of human individuality; something which left recapitulation in Owen's eyes on the same despised plane as transmutation. ³¹ On the other hand Riley went far with Blainville, Geoffroy, and their British disciples, in advocating a close contiguity of the animal series.³² He ignored Cuvier's allegedly-discrete embranchements, so powerfully advocated by orthodox taxonomists in Britain. And although he made no explicit mention of a cephalopod-fish bridge - the subject of Geoffroy's Philosophie Zoologique - he did trace the progressive steps in the development of the nervous system from simple zoophytes through the molluscan and articulate series, tacitly replacing Cuvier's divisions with a taxonomic 'gradation' .³³

There seems no doubt of the extent of Riley's transcendental commitment; and while his lectures might not have been, as the BI annual reports stated, the first of their kind in England, his courses must now be ranked alongside those of extra-establishment radicals like Knox and Grant, And conservative reformers like Green and Owen, as introducing British audiences to transcendental anatomic doctrine.³⁴

This also confirms what London medical journals were suggesting: that by the mid-1830s philosophical anatomy was well known if not wholly accepted, and that it was more widespread before 1835 than recent studies have allowed.³⁵

The important point is that Riley's was possibly the first technical exposition of higher anatomy outside a metropolitan London or Edinburgh context. That a conservative should import a reformist anatomy is a little surprising, particularly since the Bristol riots must have made any concession to anti-Christian philosophy anathema, and the fact that it came from Paris, where Geoffroy's deism at the time of the July Revolution was roundly condemned by Cuvier, rendered it still more suspect. Riley must have been aware of the problem and countered the anticipated opposition by telling his mercantile and commercial audience 'that science, unlike politics, allowed of no distinction of party, or even of country', suggesting that in fact it was perfectly respectable for the English to adopt and improve foreign science.³⁶ He probably saw his role as a paternalistic importer of the best Continental intellectual goods, using the imperial Bristol Institution to disperse such 'knowledge to the surrounding districts'. But for all this, it is clear that to, propagate a liberal Parisian anatomy, which to many had irreligious and subversive overtones, Riley would still have to activate a 'sanitising' procedure, stripping Geoffroy's science of its transformist and progressivist connotations.

While older conservatives like George Wallis or the aforementioned G.T. Clark, and the geologist Conybeare were not committed to expound the philosophical zoology of Riley, Symonds, and Carpenter, all were united in their dislike of Lamarckian materialism. One can speculate that anti-transformism was indeed the crux of a wider anti-mechanist ideology which served a useful mediating function. Anti-Lamarckian statements were often de rigueur in contemporary biogeological papers, and could have served to unite medical men holding divergent religious and political opinions. Nowhere is this better observed than in G.T. Clark's short-lived West of England Journal of Science and Literature. As befitted the organ of BI activists, the science articles centred on geology, botany, and zoology, with divisive topics like politics and 'controversial Theology' actively shunned - although naturally the tone was 'marked by a general Christian spirit'.³⁷ And as a journal of alert conservatism, editorial praise was lavished on Conybeare and the Tory ethnologist J.C. Prichard - to whom Clark would have dedicated the first volume had not such an act seemed a 'burlesque' with collapse imminent (it survived only five numbers in 1835-61).

A letter of Conybeare's shows how Riley's lectures seemed satisfactory to the geologist precisely in their taking on the progressive ideas of the French but in an acceptable form. Writing to Vernon Harcourt in July 1832, Conybeare described Riley;

He has resided years in Paris and

got all the good general views of the
French school omitting their absurdities.

I was quite astonished **at some** lectures he
once gave in our Institution - far the most
masterly essay on the subject I have ever
heard.³⁸

In his lead article on geology for the Journal,
Conybeare devoted considerable space to the earliest
Transition fossils: to brachiopods and other molluscs,
the crinoidea studied by BI curator J.S. Miller, and
Agassiz's placoidian and gonoidean fish fossils. This, he
admitted, was deliberate because a study of such grauwacke
fossils derived 'physiological importance from the complete
refutation it appears to furnish to the extravagant hypotheses
of some French naturalists, such as Lamarck and Geoffroy St.
Hilaire, concerning the progressive development of the animal
kingdom, by a gradual conversion of inferior into the
contiguous superior species'.³⁹ Conybeare saw these first
marine fossils upturn the notion of a progressive succession
of life, by showing that the earliest crinoids, cephalopods,
and fish were 'quite as perfect' as modern-day counterparts.
G.T. Clark reinforced this argument with in his own Paleyite
article on zoology, in which he denounced those who held that
the monad and an were connected by a series of beings showing
'a9sgost insensible gradations',⁴⁰

But any example from the local collections of fossils
and geological exhibits, one that physically displayed the

necessary respect for French **discussions** of sequence while shedding any transformist **accompaniments**, would be obviously attractive both to savants like Riley and to the mercantile, municipally responsible **audience** of the mid-1830s. It was exactly in this evocation **of an** instructive local palaeontology that Riley proved most effective.

Great pride **was taken** in the Bristol Institution's collection of fossils, notably Miller's crinoidea, and to the fossils unearthed on the local Durdham Downs. This was particularly true where descriptions by local men like Miller, Stutchbury, or Riley brought national recognition; or, if writers of international reputation like Agassiz could be lured to Bristol to examine its fossil fishes, thereby tacitly endorsing the city's cultural status.⁴¹ All of these factors came together in Henry Riley's study of a new Lias fossil Squaloria, - discovered by Mary Anning in Lyme Regis in 1831, and bought for the BI by one of its gentleman - mercantilist benefactors J.N. Sanders. Riley described this controversial specimen to the Geological Society of London in 1833 as a cartilaginous fish related to rays.⁴² Metropolitan teachers like R.E. Grant disagreed, considering it a saurian, on the basis of drawings. Probably as a result of this the fossil was loaned to the Geological Society for Londoners to examine.⁴³ During Louis Agassiz's visit to Bristol in 1834, Riley, who acted as part of a local welcoming committee, had the inestimable satisfaction of being proved right by the renowned ichthyologist, while Agassiz himself flatteringly acknowledged the BI, its collections, and Riley,

in his Recherches sur les Fossils Fossiles .44

Some of the fossils from Durdham Downs were of national importance. The fragmented saurian remains from these dolomite quarries (of early Secondary age) represented the oldest-known reptiles in Britain. In 1836 Riley and the new BI curator Samuel Stutchbury told the Geological Society that among new discoveries, the Thecodontosaurus would help connect the Bristol (and thus British) beds with those of the equivalent Thuringerwald system on the Continent, from which fossil monitors had come. Concerning Thecodontosaurus itself, they concluded at the Geological Society only that it was transitional between lizards and crocodiles, and seemed to confirm the rule that the older the fossils, the more they departed from modern forms .45 But in Bristol Riley had already pointed out to the merchants the real ideological significance of the Clifton fossil. His lecture at the Philosophical and Literary Society was largely devoted to refuting Geoffroy, who had used his Caen Teleosaurus to urge a transformist sequence from ichthyosaurs through teleosaurs to crocodiles.46 Riley left Conybeare to tackle Geoffroy on points of cranial anatomy, turning himself to arguments- which destroyed the axioms on which transformism rested. He pointed out that Geoffroyan development relied on a progressive peopling of the planet, such that the simplest forms were expected in the oldest rocks, and the most complicated in the recent strata:

These theories, however, as applied to the saurian remains in question are quite inadequate, since we find the remains of Ichthyosaurians and Plesiosaurians, lizards approaching fishes, and therefore the least complicated in their structure of the saurians, principally in the newer secondary strata, where as we find the monitors of Thuringia, in the older secondary strata, the same geological position as the dolomitic conglomerate in this neighbourhood, in which the remains (of the Bristol thecodontosaurs) are embedded ...

The reptiles had commenced with monitors and thecodontosaurs, not more fish-like saurians, a fact which militated against the transmutationists's ascending scale. These early Bristol and Thuringian saurians, being 'of a most complicated structure', could not be squared with Geoffroy's theory.⁴⁷ Since the newspaper reporter acknowledged that his readers were well aware of transformist theories, Conybeare's and Riley's approach had probably been a common one at the Society. But we should beware of interpreting Riley's move as obstructionist: he had already gone considerably further than the older Whig by adopting Geoffroy's anatomy. As a progressive Tory he was simply cleansing the system of its discreditable connotations. Nor, for that matter, did he actually disapprove of Geoffroy's fossil lineage, for he simultaneously incorporated it into a wider fossil sequence. He and Stutchbury envisioned 'two parallel lines' arising from the

sauroid fishes - one through the fossil monitors to the iguanodon, the other passing via the Bristol saurians, through the marine ichthyosaurs, to Geoffroy's teleosaurs. These fossil lineages were announced at the BAAS conference in 1836; only now they were explained, not as transformist sequences, but as a 'succession of creations'.⁴⁸ Riley had purged the system of its heretical transformism, what Conybeare called the French 'absurdities', - while absorbing the fossil sequence. He had achieved the Peelite goal of sanctioning a reformed science while neutralising its radical core.

Riley had contributed to a responsible trade in natural symbols: responsible, in that a muted progressivism (French without being radical) was displayed both to a Bristolian audience and to the middle ground of informed opinion that was sociologically condensed in the BAAS. Bristol had something to offer, both in its institutions and in the concrete evidence, placed within a suitable historical and scientific context, of its own natural history remains.

An ambitious form of sociology of knowledge might even see the placing of the Durdham fossils within a static, i.e. non-Lamarckian, framework that nonetheless showed evidence of French influence as a reified image of contemporary class structure; post Reform Bill, more coherent, tidied-up, and yet fixed. It is easier to develop the view that Bristol's municipal elite, and its more intellectually ambitious physicians, wanted to add to the 'civic idea' that had itself informed the muted reforms of 1832 and 1835.

The same understanding of civic needs which were at work in the example of the Durdham Down fossils can be then used to elucidate institutional structure. A study of the social factors in the creation of the Bristol, Clifton, and West of England Zoological Society (f.1835) provides a good example of this. The Society was not established simply as a consequence of Bristol's position as a commercial port with trading links to India, Africa, and America. True, it was perfectly placed to obtain the earth's 'rarest living productions'; while sea captains returning to 'this great western emporium' - already some of the major contributors to the museum of the BI - were confidently expected to stock the new gardens.⁴⁹ (The city was in fact known for its trade in exotic beasts- the Council of the Zoological Society of London dispatched its head Keeper to Bristol on hearing of the sale of a live chimpanzee in October_ 1835.)⁵⁰

But the city's imperial trade was not of itself sufficient cause for the founding of a local gardens, and it is doubtful whether the expenditure of £11,000 (about the same as expended on the founding of the BI) within two years, can be explained purely on the grounds of a charitable desire of Bristol's merchants to benefit the local savants, Rather, it seems that the authorities had strong social reasons for constructing a gardens at precisely this time, Of course, this is not to deny civic pride In local science, Quite the reverse; the Society was actually viewed as cultural compensation for the city's commercial losses. Local dignitaries were

aware that Bristol was failing to keep pace with the Northern manufacturing towns or the metropolis, and could console themselves that, with the founding of a Zoological Gardens, at least they were not being left 'behind in the march of civilisation and knowledge'.⁵¹ Judging from newspaper reports and printed prospectuses, local needs were threefold: the wealthy desired to emulate fashionable London activity, they were obviously piqued that commercial rival Liverpool had managed to establish a gardens first; and they were clearly attracted by the belief that a 'zoo' could provide a morally-uplifting replacement for the banned working-class fairs. Thus it was canvassed as a powerful form of social control. ⁵²

Often these concerns were inextricably related. Subscribers who bought £25 shares in the gardens were reassured that Bristol would soon have a rival to the fashionable Regent's Park establishment, and with munificent support it would likewise be able to afford the £1050 price-tag on a rhinoceros (an exorbitant sum paid by London the previous year).⁵³ It was above all the social respectability of the London establishment that attracted the Bristol merchants. The proprietors justified emulating the Regent's Park gardens by urging that bourgeois associations were now the common object:

The thirst of knowledge ... has become as active a principle as the thirst of wealth or of power¹ and has borrowed from these passions, for its proper purposes,

some of the expedients by which they have long successfully sought their gratification. The principle of association, by which members unite in one body for the prosecution of a common design ... - a dynamical invention by which a few obscure individuals have more than once won and maintained extensive empires - is as efficient an instrument in science as in commerce or ambition.⁵⁴

It was diplomatically **observed** at fund-raising **meetings** that, on the question of the gardens, 'like that on the Great Western Railway, men of all shades of opinions on other matters were to be seen pulling at the same end of the same rope in promoting what is useful, sound, and good - what their convictions in short informed them would benefit the city and exalt its character'.⁵⁵ Reports eagerly emphasised that it was not to be a 'party' institution. The talk of non-party organs and men of 'all shades' pulling together referred only to a narrow band in the respectable middle-class political spectrum: to the Tories and Whigs among the ruling elite, who were first to sink their differences when faced with the common need to restore stable social relations in troubled times, and emphasise the civic pride of a newly 'reformed' i.e. stable and conservatively municipal corporation,

The need for social palliatives at this moment was an aspect emphasised by a writer to the Bristol Mirror. He urged that:

In legislating against the gross **excesses of** fairs, wakes, etc., we have unavoidably taken from the mass of the people those means of social intercourse so essential to their moral discipline. The evil is acknowledged, but a remedy has not yet been proposed, We are sanguine enough to hope that Zoological Gardens may be one of the modes of attaining to that desirable object. In our present scheme we feel ourselves justified in calculating on the strenuous cooperation of all the friends of the moral and physical improvement of the lower classes, whether they belong to temperance societies, or to those for the diffusion of useful knowledge, in furnishing the people with the means of rational and contemplative amusement by enabling them to study the manners and habits of the animal Kingdom. The consequence of this study - the feeling that the dignity of the sciences and of those who cultivate them is wholly dependant on our respect for the truth - their sympathy with the educated classes - the necessary consequence of a similarity of pursuits - can have but one effect - the elevation of their moral dignity - and thus teaching them 'to study nature as the laws which govern the universe, to consider it as the glorious manifestation of the creating power, and to find in the assemblage of created things motives for admiration, gratitude, and love, constituting the duties

**of mankind towards the Master and Supreme Legislator
of worlds'.⁵⁶**

The taste of the Bristol **riots was** still bitter, **and any** institution which could **foster** gratitude rather than malice, and rational contemplation rather than criminal **reckless-**
ness, would surely be favoured by the 'merchant princes', a body - the writer duly noted - '**so pre-**eminent for their charities, so opulent **and numerous** in the ancient city of Bristol'. The **same** concern is evident in Secretary Henry Riley's notice in November 1836 of the free admission to charity children. This was held out in the belief that, 'in exchanging a promenade in the Zoological Gardens for the immemorial one in the Fairs of Temple and St. James's, their young minds may receive a tendency at variance with the gross exhibitions of those places, by witnessing the superiority of the pleasures of the understanding over those of the **senses**'.⁵⁷ This betrays the kind of social perception that existed among **managers** of the Mechanics' Institutes, where, **as Barnes** and Shapin have shown, the 'targeted' group of elite artisans were to be weaned from their purely 'sensual' outlook and initiated into the ability for higher appreciation manifested by their mercantile masters.⁵⁸

With many of these concerns uppermost, the managers paid £3456 10P, in May 1835 to one of the proprietors, the former Mayor Francis Adams, for a ten-acre farm with buildings in Summer Trenmar on Durham Downs. The site was surrounded by

heaths and, as Green-Armytage notes, had within living memory seen highwaymen hanging from its gibbet. Being away from the town centre it was geographically as well as socially in a 'happy position'.⁵⁹ A driving force in the foundation, Henry Riley was appointed the provisional secretary, and Richard Forest, the architect of the Surrey Zoological Gardens, was employed to carry out the landscaping. Of the original 300 shares, 140 had already been taken up by prominent Bristolians by July 1835, raising capital of £3500. The Committee of Management was chaired by Mr. Sheriff Franklyn, and included civic dignitaries, such as Anglican Tory merchant Henry Bush (1796-1857); the Unitarian distiller Michael Hinton Castle (1785-1845); the Anglican Tory tobacco manufacturer J.N. Franklyn (1783-1852); and the Anglican Tory wine merchant Joseph Lax (1775-1845). Bristol's idiosyncratic Tory M.P. Sir Richard Vyvyan donated £100; he also provided a valuable managerial link to the Zoological Society of London, having sat on its Council and Museum Committee in 1828-9.⁶⁰ The Gardens were finished in July 1836 in time for the much-vaunted British Association meeting in August;.

The managers copied their London counterparts and purchased premises for the establishment of a museum; it was ruled Cagain as at London] that proxy voting would be admissible for the ladies. ⁶¹ But despite these similarities in institutional format, the needs of Bristol's city fathers were not wholly congruent with those of London's land backers and wealthy avocationists, and this resulted in initial attempts to lead the provincial society in a different

direction. In London the need for respectable **space for** middle-class promenading led the founders to budget on an **admission** price of 2s 6d, presumably to exclude the rowdy **classes. But** in Bristol, **as we have seen**, the civic **leaders** designed the 'zoo' as **much as a** socially-regulated replacement for the banned **fairs, as a** middle-**class** alternative - and the gate price of one shilling was within reach of artisans.⁶² The diametric needs of the two societies also explain early differences in policy on the vexed question of Sunday opening. In London, decorum was maintained on the Sabbath by rigidly restricting entrance to Fellows and their families, to the disgust of democrat radicals like Thomas Wakley, who campaigned bitterly for the admission of the working classes on their only free day. ⁶³ But in Bristol problems arose precisely because the gardens were open to the populace on the Sabbath. Several original backers, including the Wills (tobacco) family, threatened to withdraw their support on learning of Sunday opening, insisting that it was 'derogatory to the moral character of the Institution'.⁶⁴ But reformers like the Unitarian Lant Carpenter, another Committee member#, vigorously opposed any attempt to prevent labouring men from contemplating the works of God on the Sabbath. At meetings he fought to retain Sunday opening: 'They might exclude the rich and the proprietors if they pleased, but God forbid that the poor, who passed the six days perhaps in **close** and sometimes unwholesome streets and shops, should be prevented on the only

day they had from enjoying the fresh air of the Downs, and witnessing the works of the Great Creator in those beautiful varieties which their society could produce\$. 65 The early history of the Zoological gardens, and their near closure in 1839, was defined by these arguments over Sunday closing. The 'liberal' wing, i.e. those anxious to keep the gardens open on that day, represented by men like Lant Carpenter and Henry Riley, were defeated. The loss of revenue to the Society had to be made up by the holding of fetes; animals were sold; a zebra was slaughtered to provide food for the carnivora.

The impulse towards a civic science was therefore ambivalent in this case, since the full impact of the educational mission of the gardens was lost because of Sunday closure. Nonetheless the ideal was towards respectable, educative use of natural forms as a replacement for popular sensualism, and this was agreed by all those who initiated the project, even those who argued for closing the gardens on Sunday.

As with other developments in Bristol in the 1830s, the zoological gardens represented a tentative extension of conservative principles into the new era of respectable 'liberal' politics. The arguments about Bristol College, or the strength of the opposition to Sunday opening for the zoo shows the existence of local opposition to some forms of liberalisation. But it would be wrong to see the position represented by W.D. Conybeare (in the College example) or Henry Riley (in the zoo story] as that of an aggressive

bourgeois liberalism that had no time for ecclesiastical niceties. As with other examples from the local history of scientific and medical affairs, both men wished to safeguard new initiatives within an orthodox framework, one that was not stridently evangelical but was certainly not Owenite or secularist. And some of the opposition to Sunday opening came from local families who were to become synonymous with the 'liberal' culture of mid-century, most notably the Wills.⁶⁶

Certain other features of the beliefs, and indeed the careers, of some Bristolian figures require comment, aside from stressing the tepid nature of even the most 'progressive' aspects of their writings. It is now clear that the actual business of being a doctor at all was a matter of some reluctance for James Cowles Prichard, whose chosen career might instead have been that of an academic ethnologist, perhaps housed at the University of Oxford. And in the writings of John Addington Symonds one can detect a strong interest in matters of general culture - aesthetics, or literature - that might indicate a desire for writing on matters quite unconnected with the work of a physician. It has been hinted, by Pelling, that there is a generational division, within the established names of Bristol's medical elite in the 1840s,⁶⁷ James Fogo Bernard (1806-1878), born into a Bristol medical family educated in Paris, Edinburgh, London, and Dublin, F.R.C.P. In 1838, and physician to the Bristol Infirmary 1843-56, -along with Symonds, represented an older type of medical practitioner, to be contrasted with the 'scientific' pretensions of

Augustin Prichard or William Budd. This is a helpful distinction, in that the developments of the period 1800-1840, described in previous chapters, **do seem** expressly to have been initiated by the 'older' generation, a generation that was not followed, in the local context, by younger figures anxious to keep the same institutions and practices going. The Bristol Institution, above all, had lost momentum by the early 1840s, and Pelling has given a detailed and suggestive account of how doctors in the later period found specialist societies and discussions (especially in the Microscopical Society, effectively founded in 1841). The increased presence of medical men among lecturers at the Bristol Institution, noted by J.A. Symonds, certainly occurred, but in a society that had lost a good deal of the audience and the patrons that had initially established it.⁶⁸ Indeed, a replacement community was lingering within the decayed hulk of the Bristol Institution: that of the Freemasons. It is instructive that the building of the Institution passed to the Freemasons, and that considerable numbers of the BI membership must have been members of the order. Scientific culture had passed, by mid-century, into the different world of medical specialisation on the one hand, and semi-secret civic Freemasonry on the other. However reticent the era of 'liberal' culture was to be in Bristol in the second half of the Victorian era, it was distinct from the tone and the priorities of the century's

first forty **years**. **This sense** of a past that had defined the milieu of the Bristol Institution **was described by** J.A. Symonds in a lecture entitled 'Our Institution and its studies', delivered at the BI in September 1850.⁶⁹ As he did eleven years later, in the lecture entitled '**Ten Years**', Symonds could give notice that there were new developments in the culture of science, the most notable being the growth of physics and of 'social science', while adhering to the fundamental typology that the sciences had been shaped into in the years of Herschel, Whewell and Prichard: astronomy, natural history, geology and ethnology. These were the sciences that displayed origin, connection, and the progress of civilisation. Symonds praised certain continental developments (including, as has been seen, some transcendental anatomy), but his view of organised and true knowledge was firmly rooted in the Christian idea of civilisation that had been laid down by his friend J.C. Prichard. Indeed the whole tone of Symonds's lecture was that of moral uplift and optimism as guaranteed by the Christian account of culture that Prichard had given. Symonds's interest in mental illness, **dreams** or sleepwalking was often expressed in literary (rather than medical) ways: he was an admirer of Sir Thomas Browne and de Quincey. But his proximity to the Prichardian ideal can be gauged by his sharing with his friend a belief in the truth of the category 'moral insanity',.

The notion of a 'Prichardian ideal' is a fruitful one in seeking to explain the local structure of intellectual feeling that became modified by the 1840s (when Prichard himself no longer lived in Bristol). Ethnology may not have sat easily within the early intellectual snobberies of the British Association for the Advancement of Science, but for any moderately attentive member of Bristol's cultural community, Prichard's ethnology was a virtual model of civilised societal relations. Patriarchal, ethnocentric, devout and learned; progressive with regard to the need for institutions while entirely conservative as regards doctrine; internationally esteemed: all these features of Prichard's work provided an architecture of Christian science that Bristolian elite subscribers to charities and institutions of culture could emulate and admire.

There were other aspects to the culture of science and medicine in Bristol that contradict some of this ideal. Thanks mainly to W.D. Conybeare, the Bristol Institution gave recognition to a woman, by electing Mary Somerville to an honorary membership, in 1835.⁷⁰ More disturbingly, the culture of high-minded evangelicism that distinguished the years to 1840 exacted its own price, notably in suicide. The antiquarian John Skinner (1772-1839), the mentally distressed Lant Carpenter (1780-1840) and one of the sons of Prichard himself, Theodore, all destroyed themselves. Theodore Prichard did so in circumstances of such secrecy (his father's career as a Commissioner for Lunacy would have been at risk) that it seems likely that Prichard's

wife did not know that her son had died at his own hands. Even from an earlier generation, Thomas Beddoes' son, the poet and physiologist Thomas Lovell Beddoes (1803-1849) could not maintain appearances, and he committed suicide in Basle, Switzerland early in 1849. The dark shadow of cultural evangelicalism, based as it was on an ideal of the whole way of life of a Christian community, is recorded with despair and hatred in one remarkable record of the world of the Bristolian elite in the early nineteenth century: the Memoirs of John Addington Symonds, son of the physician.⁷¹ Symonds's account of his realisation that he was homosexual is prefaced by a view of Bristolian society that the language of official society could not even suggest: a world of insane Clifton families (especially the Sissons of Lower Crescent); of a private tutorial college, on the Pembroke Road, where 'one of the ushers **was a** whoremonger, and the other a paederast'; of memories of sleeping with his father, when frightened at night, only to be further terrified when he began sleep-talking; of 'a narrow, hidebound, starched, commercial, middle-class Anglo-Saxon Evangelicism'.

The essential conservatism •.► of the Bristolian milieu, whether 'scientific' or 'medical' can be illustrated by a number of examples, shown by the high regard for Christian ethnology, or the subtle incorporation of uniformitarian or transcendentalist philosophy, or the brief life of the mildly progressive Institution that came into being in Bristol in the late Hanoverian and early Victorian era. The hidden

thoughts of the **son of one** of the most distinguished **representatives** of that **era should also form** part of a historical record of **these years**. In 1881, John Addington Symonds 'broke up' his family house at Clifton Hill:72

I ... I deliberately burned the correspondence of five generations - the letters of my grandfather and of his immediate **ancestors** through four descents. I had two good reasons at the time for doing this. One was that I did not know where to deposit these bulky documents, some of which contained matters too personal for publication, or for transference to any public library. The other was that the perusal of them left a deeply painful impression on my mind. The intense pre-occupation with so-called spiritual interests, the suffocating atmosphere of a narrow sect resembling that of a close parlour, the grim, stern dealing with young souls not properly convinced of sin, the unnatural admixture of this other-worldliness with mundane marrying and giving in marriage and professional affairs, caught me by the throat and throttled me'.

Footnotes to Chapter 7

1. For **a discussion** of these developments on a national **scale**, see Dov Ospovat, The Development of Darwin's theory, Cambridge, 1981; and his 'Perfect Adaptation and Teleological explanation: **approaches** to the problem of the history of life in the mid-nineteenth century', Studies in the History of Biology, 1978, 2t 33-56.
2. My ideas on civic science owe something to the suggestions made by David Philip Miller in his essay review 'The Social History of British Science: After the Harvest?' Social Studies of Science, 1984, 14, 115-135.
3. See W.B. Carpenter, Nature and Man: essays, scientific and philosophical, London, 1888.
4. W.B. Carpenter, 'Physiology **as an inductive science**', British and Foreign Medical Review, 1838, 5, 317-342, esp. 377-340.
5. An account of the attempt to gather support for Carpenter's Principles is available in the section **on W.B. Carpenter** in the Richard Smith Memoirs, volume 13, pages 544-545.
6. See W.B. Carpenter, Nature and Man, op.cit., (3), the introductory memoir by J.E. Carpenter, pp. 31-32.
7. On Vyvyan, see B.T. Bradfield, 'Sir Richard Vyvyan and the Country Gentlemen 1830-18341, English Historical Review, 1968, 83, 729-743, and A Letter from Sir R. Vyvyan; to his constituents, upon the commercial and financial policy of Sir Robert Peel's administration, London, 1842.

8. This information is culled from the Richard Smith **Memoirs**, volume 13, pages 616-718, where Smith gathered information about Henry Riley; other items appear at random in other parts of volume 13.
9. The pollbooks studied are the ones kept in the Search Room at the Bristol Corporation Archives Office.
Riley :appears not to have voted in 1837.
10. See Toby Appel, 'Henri de Blainville and the Animal Series: a nineteenth century chain of being', Journal of the History of Biology, 1980, 13, 291-319; R. Maulitz, 'Channel crossing: the lure of French pathology for English medical students, 1816-1836', Bulletin of the History of Medicine, 1981, 55, 475-96; D. Ospovat, The development of Darwin's theory, op.cit. (I)
11. **These issues** will be developed further in **Adrian Desmond** and Michael Neve, 'Civic Science in the 1830s: the case of Bristol', (forthcoming).
12. Henry Riley et al., 'Memorial addressed to the Chairman of the Parliamentary Committee on Medical Education, by the lecturers in the Medical School of Bristol', lancet, 1833-1834, 2, 425-6.
- 13, **Conservative medical men in the provinces could therefore** feel patronised (in the bad **sense**) by metropolitan surgeons who failed to see the merits of local medical education.

14. On Wallis see G. Wallis, Syllabus of a course of lectures on comparative anatomy, Bristol, 1825; G. Munro Smith, History of Bristol Royal Infirmary, Bristol, 1917, pps. 301-302, and appendix A; see also the annual report of the Bristol Institution for 1825. For the review by G.T. Clark, see his 'An Introduction to Zoology', West of England Journal of Science and Literature, Bristol, 1835-36, 1, 19-44, 101-111.
15. J.A. Symonds, 'Ten Years: a lecture delivered at the Bristol Institution, January, 14, 1861' in his Miscellanies, London, 1871, 72-91.
16. See W.B. Carpenter, Nature and Man, op.cit (3) page 10, and the Professor's Fees Books manuscript at University College London Library for the years 1830-1840.
17. There are only cursory newspaper reports for the lectures of 1831, in the Bristol Mercury, during March of that year. Net proceeds to the Bristol Institution were £93-3-5 for the eight lecture series. Detailed newspaper reports of the lectures on erpetology can be found pasted into the Smith Memoirs, 13, 734-754. These lectures, like those of 1833 were delivered in the afternoon at two and repeated in the evenings at seven,
18. The profits on these 1833 lectures was smaller, amounting to £54-3-7, Full newspaper reports are in the Smith Memoirs, 13, 720-731.

19. Riley defended Blainville and Geoffroy against Cuvier on specific details: thus he adopted the unity of composition of avian sternal bones (questioned by Cuvier) and adopted Blainville's natural arrangements of birds based on sternal variations. Riley also adumbrated Blainville's theory of the developmental unity between the tegumentary hair bulb and the 'Phaneres' of the eyes and teeth: see Smith Memoirs, page 726.
20. Smith Memoirs, page 721. G.T. Clark also accepted this dichotomy in his 'Introduction to zoology', page 23.
21. Smith Memoirs, page 746.
22. Henry Riley, Prospectus of a course of ten lectures on comparative anatomy and the philosophy of zoology, Bristol, 1833; see also Smith Memoirs, page 623.
23. Smith Memoirs, 720, 723.
24. Smith Memoirs, 720, 734.
25. Smith Memoirs, 721, 734.
26. Smith Memoirs, 720, 734.
27. Smith Memoirs, 720, 722, 734. In his opening lecture in 1833, Riley contended that 'the cranium and pelvis were formed of vertebrae, and were homologous', and he discussed the views of Spix and other anatomists who maintained that the cranium repeated the whole osseous system and that in this manner the pelvis, thorax, arms and legs are all to be found repeated in the jaws'. He also mentioned Prank, Meckel and Oken.

28.	Smith <u>Memoirs</u> , 720,	729, 734,	748.
29.	Smith <u>Memoirs</u> , 736:	'... the	doctrine that the lower
	animals are analagous to the	embryos	of the higher
	animals in certain	states of	the development' .
30.	Smith <u>Memoirs</u> , 754.		
31.	For Owen's dilemma,	see Adrian Desmond, 'Richard Owen's	
	Reaction to Transmutation in		the 1830s', (in press,
	to be published in	the <u>British Journal for the History</u>	
	of Science_1		

32. Riley instanced particularly the 'very gradual nature' of the transition **between saurian orders and, at a** higher level, between reptiles and mammals via the primitive Ornithorhynchus and Geoffroy's extinct **teleosaurs and steneosaurs**. It is telling that Riley's method, like that of other British Geoffroyans, consisted of relating the foetal development **of organs** and their parallel complication in the animal chain; in the case of glands, **for example**, following their evolution **from** follicles in zoophytes to full ductal glands in **mammals**.
33. E.Geoffroy St.-Hilaire, Principes de Philosophie Zoologique, **Paris**, 1830. Geoffroy gave **an account here** of his clash with Cuvier at the Academie.
34. There is **a discussion** of the paper given by Riley at the 1833 Bristol meeting of the PMSA in the Bristol Medico-Chirurgical Journal, 1982, 97. by Patricia Craig.
35. For exajnple, Philip F. Rehbock, in The Philosophical Naturalists: theories in early nineteenth century British biology, **Madison, Wisconsin, 1983**.

36. It is worth **stressing** that those Bristolians who **expounded 'liberal' arguments in the sciences did not suffer particularly, in career terms. J.A. Symonds** became a highly respected physician in the city, with an extensive private practice; W.B. Carpenter moved to London, after his Edinburgh setback, to take the chair of medical jurisprudence at University College in 1849, eventually becoming Registrar of the University. Even an ardent radical, active in the political unions, such as the 'philosophical chemist' William Herapath became a councillor of the city.
37. See The West of England Journal of Science and Literature, op.cit., (14), 'Address', page v.
38. W.D. Conybeare to the Rev. W. Vernon Harcourt, Wheldrake, York, 23 July 1832 (Harcourt MSS. Phillips volume).
39. W.D. Conybeare, 'Essay Introductory to Geology', West of England Journal, op.cit., (14), **page 6.**
40. G.T. Clark, 'Introduction to zoology', Ibid., page 22.
41. Civic pride in Agassiz's visit is undisguised in **'M. Agassiz, Recherches sur les poissons fossiles'**, in West of England Journal, op.cit., (14), 250-253. The BAAS visit of 1836 **was an even** further confirmation that Bristol's municipal elite could take some civic pride in the developments of the 1830s.
42. R. Riley, 'On the Squaloria', Transactions of the Geological Society of London, 1837, **5, 83-88.**
43. R.E. Grant, 'Lecture XIII: On the osteology of fishes', Proc. Zool. Acet, 1833-34, U), page 576; LR. Riley/, 'Fossil in the Bristol **Museum: Professor Grant's remarks**',

ibid., 977-78.

44. See 'M. Agassiz', West of England Journal, op.cit., (41).
45. H. Riley and S. Stutchbury, 'A description of various **fossil remains of three distinct Saurian animals, recently discovered in the Magnesian conglomerate near Bristol**', Transactions of the Geological Society of London, 1840, 5 (ii) 349-57.
46. E. Geoffroy St. -Hilaire, 'Divers memoires sur de grands Sauriens', Memoire de l'Academie Royale des Sciences de l'Institut de France, 1833, 12, 1-138.
47. Smith Memoirs, 13, page 658. This is a newspaper report of Riley's lecture entitled 'Observations on the fossil bones recently discovered in the Magnesian conglomerate in the vicinity of Bristol', delivered to the Philosophical and Literary Society on November 13, 1834.
48. H. Riley and S. Stutchbury, 'On an additional species of the newly-discovered saurian animals in the magnesian conglomerate of Durham Down, near Bristol',* Report of the sixth meeting of the British Association for the Advancement of Science; held at Bristol in August 1836, London, 1837, part 2, 90-94. Their argument here relies on a progressive sequence of vertebral changes in both lizard and crocodile lineages, and the use of the 'succession of creation' Idea suggests that this paper was designed to play up the kind of emphases that would be attractive to, for example, W.D. Conybeare.

49. See Smith Memoirs, page 658, and the printed prospectus for the Zoological Society at page 695. See also 'Memoir of the Bristol Institution', printed for the BAAS visit of 1836, page xiv. The BI provided dredges for shells **and boxes for specimens** which were given to sea captains. The curator Samuel Stutchbury also drew up instructions for captains intent on collecting specimens.
50. Zoological Society of London, Minutes of Council, vol. IV, 17 October 1835, 241 and 256. The chimpanzee was bought for £35.
51. Smith Memoirs, 676 and 695. By 1831 the Zoological Society of London were offering specimens to the infant Liverpool Society; see the Zoological Society of London, Minutes of Council, vol. II, 31 August 1831, page 268. Some of these specimens were declined, the Society not yet being ready to house them; see page 281.
52. For a fine study of popular entertainments that is not overtly concerned with matters of 'control', see R.D. Altick, The Shows of London, Cambridge, mass., and Lorr3on, 1978.
53. The ZSL's finances were so healthy that they could **afford to buy rare animals 'at great cost' and still remain solvent. On the purchase of a huge Indian rhinoceros, see Reports of the council and auditors of the Zoological Society of London, read at the annual general meeting, April 29, 1835, London, 1835.**

54.	Smith	<u>memoirs</u>	page	695.
55.	Smith	<u>Memoirs</u>	page	658.
56.	Smith	<u>Memoirs</u>	page	672. For a breakdown of the

Provisional Committee, (May 1835) **see pages 658 and 672.**

57. These remarks, made with 'charity children' in mind, were accompanied by the hope that 'mercantile **masters**' would take up the responsibility of looking after these **charges: see** Smith Memoirs, 672.
58. **Steven Shapin and Barry Barnes**, '**Science, Nature and Control: interpreting **Mechanics****' Institutes; Social Studies of Science, 1977, 7, 31-74.
59. A.H.N. Green - Armytage, The Story of Bristol Zoo, 1835-1965, Bristol, **1964**, page 6.
60. Green-Armytage, ibid, provides an appendix which lists the original proprietors of the zoo, together with Indications **as to who sat on** the committee.
61. ZSL Minutes of Council, vol. I, 17 August 1828, page **39; see also** P. Chalmers Mitchell, Centenary History of the Zoological Society of London, London, 1929, page 36.
62. Smith Memoirs, **page 676.**
63. \$, Bg.ixc Sprigge, The Life and Times of Thomas Wakley, London, 1899, page 304. Wakley lambasted the autocratic government of the ZSL in his Lancet, **1834-5, 2, 137200, 263-4f 323, 389-390.**

64. These remarks were made by a Colonel Whetham:
he proposed Sabbath closing knowing that Sunday takings were the highest of the week; see Smith Memoirs, page 676.
65. Smith Memoirs, 676; in this endeavour to keep the 'delights' of the natural order open to the artisans on the Sabbath, Carpenter was backed by Henry Riley.
66. See A.H.N. Green-Armytage, Bristol Zoo, op.cit., (59) 17-19. The Wills family, and several others, admitted that they would not have taken- shares had they been forewarned of Sabbath opening as part of the initial plan for the zoo.
67. M. Pelling, Cholera, op.cit. 161-62.
68. In February 1857, at the Annual General Meeting of the BI, John Naish Sanders gave an account by letter of the reasons for the decline in the fortunes of the Institution. Many of its original founders had died; non subscribing members were admitted to the Museum, which caused considerable expense; some members felt that the subscription was too high when all they did was read the papers. There is no doubt that Sanders regarded the deaths of the original supporters of the Institution as the most important factor. See FFBJ, February 21st 1857.
69. J.A. Symonds, Our Institution and its Studies, Bristol, 1850. The copy held at Bristol Central Library is numbered B 1344.

70. See Elizabeth C. Patterson, Mary Somerville and the cultivation of science, 1815-1840, Dordrecht and the Hague, 1983, 164 and 221.
71. A good edition of this now exists: The Memoirs of John Addington Symonds, edited and introduced by Phyllis Grosskurth, London, 1984. See especially pages 33-93.
73. Ibid., 54-55.

Conclusion

This thesis has attempted to concern itself with certain aspects - even certain episodes - in the history of science and medicine in provincial England at the end of the eighteenth, and at the beginning of the nineteenth, centuries. The nature of the subject matter is such that no especially useful general conclusions can be drawn from this study of Bath and Bristol: each episode is confined and self-limiting. But certain points do seem worth repeating. First, that the hospital has to be **seen**, throughout the period covered, as a form of philanthropic display, on the part of governors and subscribers, as well as being a small-scale operation for the housing of small numbers of people whose length of stay could often be prolonged. In that sense, the hospitals in Bath and Bristol tended to reflect the requirements not of patients, but of those local figures who chose to finance and run them. Even the careers of medical men could be said to be less important, in the hospital setting, than the business of charity.

The financing and support for elite scientific activities in nineteenth century Bristol can be placed within a recognisable national framework: the desire, on the part of a firmly conservative commercial and 'professional' clientele, to become part of a wider movement towards the establishment of respectable

Institutions of bourgeois culture. Thus the Bristol Institution did not display any allegiance to popular culture in Bristol; indeed its arrival, and that of other educational initiatives, deliberately indicated the wish for closed institutions as part of the 'call to seriousness' of nineteenth century evangelical life.

In the years up to about 1850, Bristol saw the appearance of a mildly successful imitation of cultural activities and beliefs that **were** themselves dictated by the senior universities in the country, and by the middle of the century the zest for prolonging these activities had passed. Meanwhile, an overcrowded medical profession had begun to organise its own career structure in new ways, and Bristol saw examples of this reorganisation in action. The conservative tone of the city's elite doctors is again the salient historical point.

The events described in Bristol should also contribute to the fading historical grip of certain stereotypic ideas on the culture of science in early nineteenth century Britain. Above all, the utilisation of concepts such as 'marginality' needs to be pondered, since, in the Bristol case at any rate, it almost completely conceals the correct historical analysis. The local elite's commitment to establishing a series of institutions that imitated the senior cultural establishments of the kingdom cannot be illuminated by the use of the

'marginality' thesis. Particularly when placed against the concrete experience of local political life, the marginality thesis proves severely wanting. Throughout the period under discussion, the political candidates favoured by established Tory opinion openly used bribery and corruption to enrol freemen on the side of conservative interests. The 1835 municipal reforms, as all commentators have agreed, produced remarkably little change in personnel or political orientation: indeed the redrawing of the parish boundaries was done in favour of Tory wards, while the historical rights of the Incorporation of the Poor remained unchanged. Likewise, the 'abolition of slavery' produced considerable compensation for the already hugely wealthy families such as the Daniels, the Pinneys, or the Miles.

Thus, the situation in this particular provincial centre is much more usefully seen within the explanatory idea of an 'alert Toryism' that sought political and cultural consolidation, rather than as part of a move from exclusion to inclusion. Of course, local manufacturers, professionals and even clergymen could be nervous about the political situation in the 1820s and 1830s, and in that sense nervous to maintain a mildly sycophantic relationship with the aristocratic interest. But the use of nervousness, in the context of this thesis, is not in any way meant to connect to the marginality idea. It was much more a question of who to leave out of the essential reforms of the 1830s, and what

kinds of educational and cultural settings to establish, however briefly, to illuminate this decision. This was the role of the Bristol Institution, and of Bristol College, just as in the political arena, the mild reforms of 1835 could lead to an Anglican-Tory hegemony until the 1850s. Bristol was still the sixth largest city of the kingdom in 1801, and its elite were determined to give that diminished, but still considerable, status a strong Tory, or mild Whig, exterior.

Some further conclusions need to be drawn regarding the personalities that surfaced inside the local culture of science, both in Bath and in Bristol. It has been stressed in these pages that the life of the culture of science, in both centres, was brief, certainly when compared with analagous examples from other parts of Britain. While this is the case, it is not meant to follow from this that individuals involved in scientific culture, in Bristol especially, were undistinguished. To take one kind of Victorian test, and apply it: the appearance of individuals in the Dictionary of National Biography. A high proportion of Bristolian activists pass this 'test' of celebrity, from J.C. Prichard, J.S. Harford and W.D. Conybeare, to the radical chemist William Herapath. And, for some individuals, Bristol provided a launching pad for metropolitan careers, one of the most instructive being that of W.B. Carpenter. Thus, the Bristol examples discussed here combined transition with quality, and it should not be

construed from what has been said that the brevity of life of the Bristol Institution reflected a lack of intellectual weight. In the early Victorian period, few figures carried the weight, intellectually speaking, of J.C. Prichard. Furthermore, the absence of the Bristol Institution from past accounts of the development of science can be precisely explained by stressing just how aloof, how elitist, how distant from vulgar intrusion, scientific life was meant to be. The activities of the BI have slipped through many a net precisely because its founders sought to keep its highminded concerns from being 'too much in the sun' of vulgar understanding.

Thus, the culture of imitation could also, given patient historical uncovering, display itself as a culture of learned reactionary intelligence, whose most conservative ideal (Prichard's ethnology and psychiatry) was also its most impressive intellectual achievement, and whose most liberal aspirations (in, say, W.B. Carpenter's physiology) were still a long way from the evolutionist materialism of other writers. Between these two poles, the institutionally brief, but intellectually not inconsiderable, activities of the Bristolian men of science, and their commercial backers, had their moment, as the provincial bourgeoisie of nineteenth century England took up its position within the stratified tensions of class society. Precisely to the extent that these activities have remained hidden, so too did a conservative social elite seek a world of safety from the growing dangers of the new social order.

Other sources used

Mathew's Bristol Directories 1800 to 1850

Bath Guides, 1770 to 1801, often called the 'New Bath Guide', compiled by Richard Cruttwell; and the 'Improved' Bath Guide, 1809 to 1816, compiled by Wood and Cunningham; and 'The Original Bath Guide', 1811 to 1856, compiled by Meyler and son

Felix Farley's Bristol Journal

Bristol Mercury

Bristol Observer

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E.R. Norris Mathews, Bristol Bibliography, Bristol, 1916.

F.A. Hyett and Rev. W. Bazeley, The Bibliographer's Manual of Gloucestershire literature, 3 vols, Gloucester, 1897.

*

J.A. Venn, Alumni Cantabriginienses, part II, 1752 to 1900, Cambridge, 1947.

J. Foster, Alumni Oxonienses, 1715 to 1886, Oxford, 1891.

R. Watt, Bibliotheca Britannica, 4 vols, Edinburgh, 1824.

W. Munk's Roll of the Royal College of Physicians, II - IV.

APPENDIX**List of Papers**

Read before the Public Meetings of the PHILOSOPHICAL AND LITERARY SOCIETY, attached to the BIASLA, **from its commencement** to the spring of 1861.

1. On the Origin **and Progress** of Scientific and Literary Societies, by the Rev. W.D. Conybeare. The first Part at the first General Meeting, and the second Part at the first Evening Meeting, Jan. 5, 1824.
2. Memoir of a Journey to the Druidical Monuments at Carnac, in Brittany; with Observations on other similar structures, by the Rev. **Mr. Eden. Read**, Jan. 30, 1834.
3. On the Distribution of Plants and Animals, by Dr. Prichard. **In two Parts; read Feb. 26, and March 25,** 1824.
4. On the Perfection of Harmony, by Mr. Rootsey, Associate of the Society. Read April 29, 1824.
5. On the Influence of Saline Attraction on the boiling points, and spontaneous evaporation of Saline Solutions, by Mr. Charles Bowles Fripp. Read May 27, 1824.
6. (1) On the Ancient Irish Metres and the Genuine Poems of Ossian, by Miss Picard.
7. (2) A Memoir describing a Collection of engraved Egyptian Stones, deposited in the Museum of the Institution by B.H. Bright, Esq., by Dr. Prichard. Read July 29, 1824,

8. Cl) On the Medicinal Leech, by Dr. Johnson,
9. (21 On the Property that Platinum and Palladium possess of favouring at different temperatures, the combination of the Hydrogen and Oxygen Gases, from essential Oils, etc., by Mr. Henry Benhamin Miller. Read August 26, 1824.
10. A Sketch of the Anatomy of Birds, by Dr. Capper. Read September 30, 1824.
11. (1) On the Nature, Principles, and Utility of the Mathematics, by Thomas Exley, Associate.
12. (2) Observations on a New Crinoide, and on Eugenia Crinites Quinquangularis, by Mr. J.S. Miller, Curator of the Institution. Read October 28, 1834.
13. (1) Description of an Economical Air Pump, invented by Mr. C.B. Fripp, on the principle employed by Dr. Hook.
14. (2) An Account of Experiments in the Application of M. Berard's Test of the Capacity of Stone and other Substances to resist the action of intense frost: with Specimens of the results, by Matthew Moggridge, Esq., of Woodfield, Monmouthshire.
15. (3) Observations on the Banwell Cavern, by Mr. J.S. Miller, Curator of the Institution. Read Nov. 25, 1824.
16. On the History of Mummies, by Dr. Prichard. Read Jan 6, 1825.
17. A Discourse on the Orcran^zation and Decomposition of the Human Body, and the Art of Embalming in general, by Mr. Richard Smith. Delivered Jan. 24, 1825.

18. (1) Historical Remarks on the Origin and Progress of Shipping, Navigation, **and Commerce**, by Charles Pope, **Esq.**
19. (2) Observations on Specimens from the Polar Expedition under Captain **Parry, presented** to the Institution by W. Rowland, **Esq. Honorary Member of** the Society; by Mr. J.S. Miller, Curator of the Institution. **Read Feb. 10, 1825.**
20. A Dissertation on Life Insurance and Annuities, and on the Duration of Human Life in reference thereto, and as connected with Physical and Moral Science; by Mr. Robert Rankin. **Read February 24, 1825.**
21. (1) On the Etymon of Bristol, by the Rev. John Skinner, A.M., F.R.S., F.A.S., of Camerton, Honorary Member of the Society.
22. (2) Observations on the various means provided by Nature for the protection **of some Animals** of the Tribe Mollusca, by Mr. J.S. Miller. Read March 17, 1825.
23. (1) An Essay on the Geology of Sicily, by Dr. Charles Daubeny, Professor of Chemistry in the University of Oxford, and Honorary Member of the Society.
24. (2) On the sculptures discovered at Selinus, in Sicily, by the same. Read April 14, 1825,
25. An Account of A Journey to Lyme Regis after the great Storm In Nov. 1824, by the Rev. W.D. Conybeare. Read **April 28, 1825.**

26. (11 A Sequel to an Account of Journey to Lyme Regis, including a description of the Whetstone Quarries of Blackdown, etc., by the Rev. W.D. Conybeare.
27. (2) On the Diluvium of Jamaica, by H.T. De la Beche, Esq., F.R.S., F.G.S., etc. Read May 12, 1825.
28. (1) Sir Thomas Lawrence's Address to the Students of the Royal Academy. Presented to the Society by the Author.
29. (2) Memoir on an Egyptian Slab, curiously adorned with hieroglyphic characters, presented to the Institution by Capt. Buckam; by the Rev. W.D. Conybeare.
30. (3) A Summary Report of the Society's Proceedings to the close of the Session, ending 26 May, 1825, by the Rev. W.D. Conybeare. Read May 26, 1825.
31. (1) On the Irish Elk, by Mr. J.S. Miller
32. (2) Suggestions for the Improvement of the Safety Lamp, invented by Sir Humphry Davy, by Mr. B.H. Miller. Read October 6, 1825.
33. Recollections of the State of the Fine Arts in Flanders, by Mr. J. King, Artist. Read Oct. 27, 1825.
34. (1) Remarks on the Balance of the Preservation and Destruction of Animal Life, by Philip Duncan, Esq., of Oxford.
35. (2) Monography of the Genus Aranea, by the same. Read Nov. 24, 1825,
36. (11 Observations on the Natural History of the Lion, by Mr. B.H. Miller.

37. (21 Observations on the Genus Antelope, by Mr. Miller. Read. Dec. 29, 1825.
38. Remarks on some Roman Remains found on Croy Hill, on the Line of Antoninus's Wall, by the Rev. John Skinner, M.A., F.R.S., F.A.S., etc. of Camerton, Honorary Member of the Society. Read Jan 26, 1826.
39. (1) Considerations on the present state of Greece, suggested by (Recollections of) a Tour through the Levant, by Mr. Robert Bruce, Jr.
40. (2) On the History of the early Population of Gaul and Great Britain, by Dr. Prichard. Read Feb. 23, 1826.
41. Remarks on Anglo-Saxon Poetry, with versions of several hitherto untranslated Specimens of Saxon Poetry, by the Rev. W.D. Conybeare. Read March 30, 1826.
42. (1) A few Hints on Painting as a Liberal Art, with a short Notice of the Schools by Mr. F. Norton.
43. (2) An Inquiry into the History and Character of the Romansch Language, by the Rev. John Eden. Read April 27th, 1826.
44. (1) Observations on the Races of people inhabiting those parts of Africa, Which have been the scene of recent discoveries, by Dr. Prichard.
45. (21 Some Account of the Egyptian Mummies presented to the Bristol Institution by John Webb, Esq., of Leghorn, by Mr. J.B. Estlin. Read May 25, 1826.

46. An inquiry Into the Value of Vaccination as a preservative against Small Pox, by Mr, John Bishop Estlin. Read 12th of October, 1826,
47. An Account of the Opening **of the Deverel** Barrow (which contained the Urns recently **presented** to the Bristol Institution by Sir Richard Colt Hoare, Bart.), by the Rev. John **Eden**. **Read** 26 October, 1826.
48. Some Strictures on English **and German** Poetry, introductory **to an Essay** on the Productions of the French School, by Charles Abraham Elton, Esq., Honorary Member of the Society. Read 9th November, 1826.
49. An Essay on the Fitness of the French Language for the higher **purposes** of Poetry, by Charles Abraham Elton, **Esq.** **Read 23 November, 1826.**
50. An Essay on the Native Races of America, with some general observations on the Varieties of the Human Skull, by James Cowles Prichard, M.D., F.R.S., etc. Read 21 December, 1826.
51. First Part of An Essay on the Writing of the Ancients, on the Materials they used to write upon, and the Instruments employed by them to write with; and on the introduction of the Art of Printing, by Mr. John Mathew Gutch, Read 11th January, 1827.
52. (11 An Essay on Somnambulism, by Philip Bury Duncan, Esq., Honorary Member of the Society.

53. (21 Remarks on the Kimmeridge Coal Money, by Sir Richard Colt **Hoare**, Bart.,, Honorary Member of the Society.
54. (31 A Report of the Opening of an Ancient Barrow, at Nettleton, in Wiltshire, by Sir **R.C. Hoare, Bart.**, with 'Introductory **Observations** ', by Andrew Carrick, M.D.; Read 25 January, 1827.
55. A Dissertation on the Situation of the Ancient Camolodunum, the first establishment of the Romans in Britain, by the Rev. John Skinner, M.A., F.R.S., F.A.S., of Camerton, near Bath, Honorary Member of the Society. Read 8 February, 1827.
56. Second Part of an Essay on the Writing of the Ancients, etc., by Mr. J.M. Gutch. **Read 22nd** February, 1827.
57. Third Part of an Essay on the Writing of the Ancients, etc., by Mr. J.M. Gutch. Read 8th March, 1827.
58. An Essay on Aerolites or Meteoric Stones, by Mr. Samuel Worsley. Read 22nd March, 1827.
59. On the Varieties of Domestic Animals, by Henry Woods, Esq., of Bath, Honorary Member of the Society. Read 5th April, 1827.
60. 111 An Account, Historical and Descriptive, of the Bristol High **Crossr by Thomas Garrard, Esq., Chamberlain of the City of Bristol,**
61. (21 **Observations** on the **Ancient Ferries or Passages** over the River Severn, by Mr. Samuel Rootsey, F.L.S., Associate of the Society. Read 19th April, 1827.

62. Fourth and concluding Part of **an Essay on** the Writing of the Ancients, etc., by Mr, J.M. Gutch. Read 3rd May, 1827.
63. An Inquiry how far Translations, particularly from the Learned Languages, are competent to convey an adequate idea of the Originals, by the Rev. John **Eden, B.D.** Read 17th May, 1827.
64. A Letter, stating the true Site of the Ancient Colony of Camolodunum, addressed to the Philosophical and Literary Society, annexed to the Bristol Institution, by its Author, Sir Richard Colt Hoare, Bart., F.A.S., etc. Read 11th October, 1827.
65. Part First of an Historical Account of the most remarkable Pestilences that have afflicted Mankind in different Ages, by James Cowles Prichard, M.D. F.R.S., etc. Read 11th October, 1827.
66. An Account of the Cromlechs, Barrows, and presumed Danish Entrenchments of the Island of Guernsey, by Mr. Metevier. Read 8th November, 1827.
67. On the Origin and Formation of the Gothic Tongues, but particularly of the Anglo-Saxon, by the Rev. Joseph Bosworth, M.A., F.A.S., etc., Honorary Member of the Society. Read 6th December' 1827.
68. Observations on the Egyptian Crocodile, by Mr. J.S. Miller, Read 6th December, 1827.

69. **Strictures on the Tempests** with some Introductory
Observations on the Life, Genius, and Times of
Shakespeare, by the Rev. Joseph Porter, M.A., Read
10th January, 1828.
70. **On the Employment of Electrometrical Instruments**, by
Mr. Robert Addams. Read 24th January, 1828.
71. **Second and concluding Part of an Historical Account**
of the most remarkable Pestilences that have afflicted
Mankind from the earliest ages, by James Cowles
Prichard, M.D., F.R.S., etc. Read 7th February, 1828.
72. (1) **On the Religion of the Druids**, as it is described
by Cambrian Writers of **Modern Times**, by Mr. J.F. Edgar.
73. (2) **Observations on the Gallic Deity Belinus**, by Mr.
Metevier. Read 6th March, 1828.
74. **On the Nature and Properties of the Blood; and on**
the Practice of Transfusion, by Mr. John Champeny Swayne.
Read 3rd April, 1828.
75. **On the Sentient and Intellective Faculty of the Lower**
Animals, by Mr. Charles Bowles Fripp. Read 8th May,
1828.
76. (1) **Observations on the Progress made by the Nation- of**
the Israelites in the Sciences and the Arts, by Mr.
Thompson.
77. **(21 Circumstances relative to the Life of Chatterton,**
hitherto unpublished, by Mr. George Cumberland, of
Bristol. Read 25th September, 1828.
78. **(11 Reflections on the Poetic Character of Milton**, by
the Rev. John Eden, B.D.

79. (21 Observations on the Agave Americana, by Mr. J.S. Miller. Read 23rd October, 1828.
80. A Review of the Doctrines of Modern Physiologists respecting a Vital Principle, and the Phenomena of Animal and Physical Life, by James Cowles Prichard, M.D., F.R.S., etc. Read 27th November, 1828.
81. On Chatterton and the Rowleian Controversy, by Mr. Cottle, Read 18th December, 1828.
82. A concise view of a New Theory of Physics, founded on the known and established Principles of Gravitation; with its application to explain the Phenomena of Chemistry, Electricity, Magnetism, and Electro-Magnetism, by Thos. Exley, A.M. Read 22nd January, 1829.
83. (1) Observations on the Constitution and Government of Ancient Greece, as indicated in the Illiad & Odyssey; with notices on the apparent resemblance between them, and some of the laws and customs of the Germans and their Descendants, by Mr. Joseph Reynolds.
84. (2) Observations on the Guana, (Iguana tuberculata. Lamk, and Pterodactylus, Cuv.) by Dr. Riley, and Mr. J.S. Miller. Read 26th February, 1829.
85. Some Account of An Experiment in Monmouthshire, for improving the Condition of the Labouring Poor, by J. H. Moggridge, Esq. Read 12 March, 1829.

86. Some general Remarks on the Structure And
 Properties of the Skeleton in various **classes of**
 Animals; and its mechanical arrangment in the Human
 Species, by Mr. Henry Clark. Read 26th March, 1829.
87. First Part of a Sketch of the Rise and Progress of
 French Literature; in which it is particularly
 intended to trace the advancement of French Poetry
 through its various stages, from the earliest period
 to the present time, by Mr. L.D. De Ridder. Read
 9th April, 1829.
88. (1) Observations on the mode in which the mind acquires
 a knowledge of Distance; illustrated by a case of
 restored sight, by J.B. Estlin, F.L.S.
89. (2) A Description of the Capybara of South America,
 by Mr. Harrison. Read 23 April, 1829.
90. (1) Observations on the Genus Ourang. By H. Riley,
 M.D.
91. (2) On the Utility of the **Science of** Horticulture,
 by Mr. J.S. Miller. Read 28th May, 1829.
92. Second Part of a Sketch of French Literature; in
 which it is particularly intended to take a retrospect
 of the Classical Writers of the French Augustan Age,
 and of the most eminent Poets of the last Century;
 with a notice of the most celebrated Authors of the
 present time, By Mr. L.E. De Ridder. Read 11th June,
 1829.

93. (1) Observations on Mr. White's Patent Self-adjusting Pump-Buckets, by Mr. J. Dove.
94. (21 On the Nodal Points, or Quiescent Points, of Vibrating Bodies, when they are made to produce Sound, by Mr. Robert **Addams**, **Hon. Member of** the Society. Read 22nd October, 1829.
95. On the Principle and Applications of the Pendulum; with notices of the History of Horology, from the earliest to the present period, by the Rev. Lant Carpenter, LL.D. The First Part of this Paper was read 26th November; and the Second on 10th December, 1825.
96. On Universal History, by Mr. Matthew Bridges. Read 25th February, 1830.
97. (1) Part First of an Essay on Elocution, accompanied with illustrative **Readings, by Mr. Wensley. Read** 11th March, 1830.
98. (2) An Account of a Roman Villa, lately discovered **by S. Hassall, Esq., at** Pitney, in **Somersetshire**, by Sir Richard Colt **Hoare, Bart.** Read 11th March, 1830.
99. Clj On Hair, by J.S. Duncan, M.A., of New College, Oxford, Honorary Member of the Society. Read 8th April, 1830,
100. C21 On the Native Cottons of British Guyana. By Mr. M. Hilhouse, of Demarara, Honorary Member of the Society. Read 8th April, 1830.

101. Second and Concluding Part of an Essay on Elocution, accompanied with illustrative Readings, by Mr. Wensley. Read 22nd April, 1830.
102. On the Moral and Literary Character of Cicero, by the Rev. John Eden. Read 13th May, 1830.
103. First Part of an Essay on the Philosophy of Language, as applied to the Study of the French, by Mr. L.E. De Ridder. Read 27th May, 1830.
104. (1) **Second and Concluding Part of an Essay on the Philosophy of Lanuage, as applied to the Study of the French, by Mr. L.E. De Ridder. Read 27th May, 1830.**
105. (2) An Account of the Form and Composition of the **Dresses** invented by Professor Aldini, for the purpose of rescuing Human Life and Property frcm injury or Destruction by Fire, by Edward Halse, F.L.S. Read May 27th, 1830.
106. A Survey of Modern Georgraphical Discoveries in Palestine and the neighbouring Countries, illustrat-
ive of some parts of Sacred History, by J.C. Prichard, M.D., F.R.S., etc. Read 28th October, 1830.
107. Some Observations on the Agriculture of the Romans, as detailed in the First Book of Virgil lIs Georgics', by Mr. W.P. Taunton, Read 25th NoVembex, 1830.
108. A Gentleman's Pay in Rome, in the time of Augustus, by P.B. Duncan, Esq,, Hon, Member of the Society, Read 23 December, 1830.

104. On Human Food, by P.B. Duncan, Esq., Hon. Member of the Society, Read 24th February, 1831.
110. On Instinct, **by P.B. Duncan, Esq., Hon. Member of the Society.** Read 24th **March, 1831.**
111. An Essay on the Life and Times of William Canynges, Merchant of Bristowe, by the Rev. J. Dallaway, F.S.A., **Hon. Member** of the Society. Read 28th April, 1831.
112. An Account of Mr. Wm. Hilhouse's Expedition to the Curubung Creek, and of his Discoveries in Exploring the Course of ithe Masaaroony River, collected and arranged from documents transmitted by Mr. Hilhouse, by Mr. A. Hartnell, F.R.S.L. Read 12th May, 1831.
113. On Sculpture, by P.B. Duncan, Esq. Hon. Member of the Society. Read 27th October, 1831.
114. On the Choice of a Subject in Painting, by P.B. Duncan, **Esq., Hon. Member of** the Society. Read 27th Oct., 1831.
115. Some Account **of a scarce** Latin Poem, entitled '**Maurus**', written by **Franciscus Rosetus, of Verona, and** dedicated by him to King Henry the Eighth of England, by the Rev. John Eden, B.D. Read 24th November, 1831.
116. A Description of the Organ of Hearing, by John Harrison, Esq. Read 29th December, 1831,
- 117, First Part of **An Essay on** Apparitions, by J.A. Symonds, M.D. Read 26th January, 1832,
- 118, Second and conclud.nq Part of an Essay on apparitions, by J.A. Symonds, M.D. Read February 9th, 1832,

119. On Conversation, by P,B, Duncan, Esq., Hon, Member of the Society. Read February 23rd, 1832.
120. Remarks on Fire-damp in Coal pits, with Mr. Buddle's Account of the Accident at JarrawColliery, on the 3rd of August, 1830, by Robert Rankin, Jr., B.C.L. Read March 13th, 1832.
121. On the Formation and Growth of Coral Reefs and Islands, by Mr. Samuel Stutchbury, A.A.S., Curator of the Institution. Read March 29th, 1832.
122. Remarks on the Application of Philological Researches to the History of Mankind, with some observations on Baron Cuvier's Division of Nations into Three Distinct Races, by James Cowles Prichard, M.D., F.R.S., etc., Pro-Director of the Society. Read April 26th, 1832.
123. A View of Gravitation as discovered by Sir Isaac Newton, and established by succeeding Philosophers; with Observations in its Relation to Physicial Science, and particularly to the constitution and operation of the elementary parts of bodies, by Thomas Exley, Associate of the Society. Read May 24th, 1832.
134. (1) On the Analogies of Language, by Mr. Edward Pococke. Read October 11th, 1832.
135. (.21 Observations on the Relation given by the Rev. Richard Warner, F,A,S,, In his Literaary Recollections of Remarkable Circumstances, said to have occured in connection with the death of the Hon. William Granville

petty, brother to the present Margins of Lansdown, chiefly derived from the remarks of the Rev. Thomas Jervis, Preceptor of Mr. Petty and the late Marquis of his brother, by the Rev, Lant Carpenter, LL.D. Read October 11th, 1832.

126. The Rhine and the Rhone compared, by the Rev. John Eden. Read November 8th, 1832.
127. On the Origin and Progress of Architecture, by Thomas **Wilson**. **Read December** 13th, 1832.
128. An Ethnographical Memoir of the Slavonic Nations, with Remarks on their Mythology, by J.C. Prichard, M.D. F.R.S., etc. Read 10th January, 1833.
129. On Optical Illusions, accompanied with Illustrative Machinery, by Robert Addams, Esq. Hon. Member of the Society. Read 24th January, 1833.
130. An attempt at an Analysis of our personal Nomenclature; with some Suggestions for an Extension and Improvement of the **same**, by the Rev. John Hunter, of Bath. Read 14th February, 1833.
131. On the Physical Constitution of the World, by Mr. John Herapth, of Kensington. Read 14th March, 1833.
132. On Quackery, by P.B. Duncan, Esq., of Bath. Read 14th March, 1833.
133. An Historical Account of the Blow pipe; with Illustrative Experiments, showing its Application and use in the Arts, by Edward **Halse**, F.L.S. Read 21st March, 1833.

134. **Part First of a Sketch of the Origin and Progress**
of the Drama; with Illustrations of the Genius of
Shakespeare, by Mark. A. Hartnell, **Esq., M.A.**
Read 11th April, 1833.
135. Part Second of a Sketch of the Origin **and Progress**
of the Drama; with Illustrations of the Genius of
Shakespeare, by Mark A. Hartnell, **Esq., M.A.** Read
16th May, 1833.
136. On the Organic Changes which occur during the Growth
of the Human Body, by Dr. Symonds. Read 23 May, 1833.
137. Observations on the Priority and the Original Locality
of the Inner Circles of Stone at Stonehenge, derived
chiefly from their Geological Character, by the Rev.
W.D. Conybeare, F.R.S., F.G.S., etc. Read 10th
October, 1833.
138. An Account of the Causes to which are to be imputed
the very great size of extinct Animals compared with
the living ones, by Dr. Riley. Read 10th October,
1833.
139. On the Organic Revolutions that occur in the Growth
and Decline of the Human Body, by Dr. Symonds. Read
14th November, 1833.
140. Some Considerations on the mode of determining the
character of the remains of extinct Species of
Animals; with Illustrations applied to the Megalonyx,
Megatherium, Mastodon, and Mammoth, by Dr. Riley.
Read 11th **Dec., 1833.**

141. An Inquiry Into the Causes of the .superiority of certain Nations **in reference** to the Fine Arts, by the **Rev. John Eden, B.D.** Read 16th January, 1834.
142. **A Notice on British Birds, by John Price, Esq.,** Read 16th January, 1834.
143. On Monachism, by William Rathbone **Greg, Esq.** Read 13th February, 1834.
144. On the Pita Plant; the Leaves of which furnish a **Fibre valuable for Cordage, by Dr. Hamilton, of Plymouth.** Read 13th February, 1834.
145. **Observations on the changes produced by the Domestication of some Animals, by Henry Riley, M.D.** Read 13th March, 1834.
146. On Endosmose; or the Machinery of Growth in Plants and Animals, by William Poole King, Esq.; Read 10th April, 1834.
147. On the Physical and Political Geography of Palestine, by the Rev. Lant Carpenter, LL.D. Read 15th May, 1834.
148. Literary History of Hippocrates, in connection with the Philosophy of Greece, by Dr. Williams. Read 16th October, 1834.
149. **Observations on some Fossil Bones recently discovered in the Magnesian Conglomerate in the Vicinity of Bristol, by Henry Riley, M,D,** Read 13th November, 1834.

150. Observations on the Geology of the mediate neighbourhood of Bristol; particularly the Magnesian Conglomerate, as connected with the recently **discovered Fossil Bones, described by Dr. Riley,** in his communication to the Society, on the 13th November, 1834, by the Rev. W.D. Conybeare, Pro-Director of the Society. Read 20th November, 1834.
151. On the **relations between Mind and Muscle**, by J.A. Symonds, M.D. Read 11th December, 1834.
152. (1) **Observations on the Evidence of Phrenology.**
153. (2) An Outline of the History of Animal Magnetism; both by James Cowles Prichard, M.D., F.R.S., etc., Pro-Director of the Society. **Read** 8th January, 1835.
154. On the Origin of the Worship of Animals, by the Marquis Spineto, Hon. Member of the Society. Read 15th **January, 1835.**
155. Observations on Zoology; chiefly introductory to the Science, by Mr. G.T. Clark, of Clifton Place. Read 22nd January, 1835.
156. **Notice of a Case of Blue Disease; caused by an** incomplete development of the interventricular and interauricular Septa, by Henry Riley, **M.D. Read** 12th February, 1835.
157. \$oque Account of the Manners and Customs of the Timmanees, a Nation of Blacks on the Western Coast of Africa, as observed during a Visit to the Falls of the River Mitomba or Rokelle, in the Month of June,

of the Year 1834, by Francis J.H. Rankin, Esq.

Read 12th March, 1835.

158. An Analysis of Mons. Guerry's 'Essai sur la
Statistique Morale de la France', by Mr. Charles
Bowles Fripp. - First Part, read by Mr. C.B.F., on
23rd April, 1835. Second Part read by Mr. C.B.F.,
on 7th May, 1835.
159. On Physical Education; with Illustrations of the
Advantages derivable from Gymnastic Exercises, by
Mons. Louis Frechet. Read 8th October, 1835.
160. On the Statistics of Great Britain; comprehending
the past, present, and probable future condition
and prospects of the manufacturing, mining, commercial,
and agricultural interests of the United Kingdom,
being the result of extensive inquiries made during
a series of Tours, undertaken with particular reference
to those objects, by Henry Adcock, Esq. Read 12th
November, 1835.
161. On the Physical and Political Geography of Galilee,
according to the most recent Accounts of Modern
Travellers, by the Rev. Dr. Carpenter. Read 10th
December, 1835.
162. Part Second of a Descriptive Survey of the Course of
the Jordan and the Dead Sea, and of Jerusalem and
the Temple; forming the second and concluding part
of a Paper on the Physical and Political Geography

of Palestine, at the period of the Gospel History,
by the Rev. Lant Carpenter, LL.D. Read 21st January,
1836.

163. Some general Considerations on the Formation of
Caverns, and the Fossil Remains deposited therein,
by John Stanton, Esq. of Dowry-Square. Read 14th
April 1836.
164. A Dissertation on the Origin and Progress of the
Italian Language to the time of Dante, Petrarch,
and Boccacio; and incidentally on the French,
Provencal, and Spanish Languages, by Il Signor
Francesco Saveiro Donato. Read 5th May, 1836.
165. On the Polarization of Light, by William Herapath,
Esq.
166. Observations on the poetical- productions of the
late Mrs Hemens, with illustrative extracts by Rev.
Dr. Lant Carpenter.
167. Remarks on the essential excellencies of poetry
by Andrew Norton, Esq. of Boston, Hon. Member of
the Society and lately Professor of Sacred Literature
in Harvard University, Cambridge, Mass. Both read
October 20th, 1836.
- 168, On Sea Serpents by J., Esq. A.M. Read
12th January, 1837.
169. On the general actual state and prospects of science,
and on the best mode of rehdaiting local philosophical

- societies efficient instruments in its promotion,
by the Rev. W.D. Conybeare, recently appointed
Director of the Society. Read 29th June, 1837.
170. On the osteology and Natural History of the Elephant;
by Henry Riley, M.D. This lecture was illustrated
by a fine skeleton of an Asiatic elephant in the
museum of the Institution. Read 29th June, 1837.
A tusk of a mammoth was discovered by workmen
excavating at the Great Western Cotton Factory in
St. Philips and was presented to the Institution by
J.B. Clarke, Esq.;
171. **The Discovery of the Laws of the Tides, from**
Observation, by the Rev. William Whewell. Read
July 26th, 1838.
172. John Eden in the chair. The Natural History of the
Cross Bill (the *Loxia* of Ornithologists) by Henry
Riley, M.D. Lithiate of ammonia, as secreted by
the Boa constrictor at the Zoological Gardens, by
William Herapath (and other secretions, including
crystalline metallic antimony, observed on the
skin of a patient at the Infirmary). A gold
Cunobeline British coin, found at Banwell, weighted
84 grains; exhibited by Mr. Moore, Meeting held
on October 25th, 1838,
173. On the Aboriginal inhabitants of Northern Europe
by J.C. Prichard. January 15th, 1839.

174. On the position of the cetacea in the animal **series**,
by Henry Riley, **M.D. Dr** Prichard **presided**. Thursday,
February 14th, 1839 and Thursday, February 21st,
1838.
175. Phrenology and its relation to the Human Mind, Dr
Carpenter. S.P. Pratt of Bath elected an Hon.
Member. April 11th, 1838.
176. (Private meeting) Telescopes by Mr. William West.
Rev. Eden in the chair. Anatomical Structure of
Insects by G.H.K. Thwaites. Observations on the Human
Stomach by Dr. Fairbrother. No date given for
meeting.
177. Mr. Samuel Stutchbury, 'The Island of Lundy'; May
30th, 1839. The latter report is a full account of
the geology of Lundy.
178. William Benjamin Carpenter, On some curious phenomena
of vegetation lately discovered. Read October 10th,
1839.
179. (Private meeting/- Mr. William West Two Specimens of
Daguerrotype. Mr. Samuel Stutchbury, The occurrence
of coal in iron ore, near the mines of Broadfield
Down. September 26th, 1839.
180. Dr. Henry Riley; The Families of Musks and Ordinary
Deer. December 12th, 1839,
181. Mr. William Herapath; Chemical composition, and
Properties of water. February 13th, 1840.

182. William Daniel Conybeare. The Land Slip on the Coast of Dorsetshire, Thursday March 13th, 1840, (repeated on the Friday%.
183. (1) Mr. Samuel Stutchbury: Specimens of Electrotypes. **3rd December, 1840.**
184. (2) **Mr. William Sanders: exhibited a rain-gauge invented by Professor Phillips** of York, on the same evening.
185. (3) G.H.K. Thwaites and Mr. S. Stutchbury: The Termes Bellicosus, or White Ant; December 3rd, 1840.
186. (4) Dr. Fairbrother placed on the table a foetus born without a brain.
- In FFBJ: May 29th, 1841: the report of the Philosophical and Literary Society. No public Meetings; instead communications by Mr. Exley on physical **science**; on the Electrotypes; on Phillips rain gauge; on crystallography by Mr. W. Sanders and S. Stutchbury; on Chemical Subjects by Mr. Herapath; Mr. John King and Dr. Fairbrother on the aspects of surgical practice; **Mr. Stevens on Mosses and Fungi**; Mr. Stutchbury on Shells of the Family Unionidae.
187. In FFBJ December 31st, 1842; report on private meeting of the Philosophical Society, involving the following two papers;.. Mr. Exley, The chemical

action of Platina upon a mixture of oxygen and hydrogen gases, (as expounded in the author's New Theory of Physics).

188. **Mr. Stutchbury, Observations on the Bone Cavern at Durdham Down.**
189. **Recommencement of public meetings; Observations on** the geological phenomena displayed by the GWR between Bristol and Bath, William Sanders. January 18th, 1843.
190. Cells as the Instruments of the Vegetable and Animal Functions, by W.B. Carpenter. March 9th, 1843.
191. On the Optical **illusions** which the **eye is exposed to** in the forming of judgements on the motion of bodies in remote space, by "Aaron Hartnell. May 18th 1843.
192. On the Natural History of the Poisonous and Edible Mushroom, by Henry O. Stephens. January 11th, 1844.
193. On the Microscopic structure of shells, by W.B. Carpenter. April 24th, 1844.
194. On the Sleeping Fish of the River Gambia, (The **Lepidosiren annectans of Professor Owen**) by Samuel Stutchbury. **May 18th, 1844.**
195. An account of the Haswell and other collieries of the North **of England**, by Samuel Stutchbury. **December 12, 1844.**
- 196, Some observations on the life and character of **Napoleon Bonaparte**, by J, Sidney, **Esq. May 8th, 1845.**
197. Modes of locomotion in the animal kingdom by Augustin Prichard. /undated/.

- 198, On the Gedichte or minor poems of Schiller by Rev.
 J.C. Swayne. (undated?.
 199. On the Fungi which infest wheat and other Arcalia
 by Mr. H.O. Stephens. (undated?.
 200. On Gothic Architecture by Mr. T.H. Sealy. (undated?.
 201. Respiration by William Budd. October 1845.
 202. The Spirit of the Old Greek Drama by Rev. G.C. Swayne.
 November 1845.
 203. The Modern Literature of Germany by Mr. Werner.
 204. Volcanoes by Mr. Godfrey. (December/ 1845.
 205. Fossil Reptiles, especially the Pleisiosaurus
 Megecephelus, /January? 1846, a series of three
 memoirs by Dr. H. Riley.
 206. Fossil Plants by William Sanders, (March? 1846.
 207. National Peculiarities in the Form of the Cranium,
 by Augustin Prichard, (April? 1846.
 208. The Natural and Economic History of Tea and Coffee,
 by H.O. Stephens.
- At the private meetings, papers by Mr. Moore on
Carriage Wheels; W. Sanders on the Dicynodon and
the Geology of the Cleveland and Wraxall Hills; Mr.
Stephens on Disease in Potatoes; Mr. Herapath on
Physical Properties of Light; Mr. J.G. Swayne on
Muscular Fibre; Mr. Stutchbury on The Cephalopoda,
with reference to the Fossil Aptacus; 1Sr. Stutchbury
on The Geology of the Southern County of Ireland.

- 209, William Herapath, On the Metals of the Earths,
November 29th, 1855.
- On October 11, 1856, a soiree was held at the**
Philosophical Institution, mainly consisting of an
exhibition of paintings and photographs.
210. **Firstlecture of the season: G.C. Leech, Esq.**
On Life and **Manners in** the United **States**. October
21st, 1856.
211. Robert Etheridge gives four lectures on Geology:
starting on Monday, October 27th, 1856; and continu-
ing on 3rd November ('Palaeozoic Age'); 10th
November ('Mesozoic'); 17th November ('Tertiary'
or Cainozoic age).
212. George Pryce, Eminent Literary Characters in Bristol
and its neighbourhood during the Middle Ages.
November 24th and 31st, 1856.
213. Reverend F.W. Gotch, Literary Forgeries,
December 15th and December 22nd, 1856.
214. Private meetings held for members of the Philosophical
and Literary Society in 1860 heard papers by Mr.
Stoddart, on October 25th, 1860, on the corals of the
Carboniferous Limestone; Mr. Real on mixing
operations In Devon and Cornwall, on the same day.
in 1861, on February 1st, Mr, Thomas Growder described
the varieties of Iron ore found near Bristol; later

in the spring of 1861, Mr. Samuel Henry of Swayne, discussed the classification of the class mammalia, as proposed by Professor Owen. And at the last meeting, Dr. Bird Herapath demonstrated the anatomy of the starfish.

APPENDIX (1,

The following is a list of the purchasers of shares in the Bristol Institution, from its inception, in alphabetical order.

Information then follows as to how the shares were transferred, and to whom. The list comes from the records of the BI, under 32079 (4) in the Corporation Archives, College Green, Bristol, and reflects the fact that the occupation of each shareholder is not always given, and that the list is technically incomplete.

Edward Ash; Linen Merchant: share no I; bought Dec. 17. 1817. One share £25 by cash. Name changed to Cornelius Ash; share altered on Feb 24 1824 to Thomas Bonville Were; on February 3rd 1848 to Edward Joseph Staples, M.D. He died on July 12 1853 and share no. I was relinquished to the Institution Committee on Nov. 4 1852.

Richard Ash; gentleman; **share no 2**; bought in two states; May 15 1810 £15; and Dec 17 1810 £10; he died on Feb 11 1866 and the share was not transferred.

Samuel Ash; no occupation given; bought shares no. 3 and 4; on April 8 1809 he bought £10; on March 13 1810 another £20; and on May 21 1810, another £20. Share no. 3 transferred to George Woodriff Franklyn on Jan 5 1826; no other occupant. Share no. 4 transferred to Frederick Norton on Dec 4 1824, to John Norton on Jan 3 1833; and to Sir Richard Rawlinson Vyvyan Bt. M.P. on Feb 7 1833.

Mrs Maria Acland: Clifton; **share no 5**; bought on Jan 16' 1824; **transferred on Feb 4 1836 to Charles Hill, Ship-builder**, the **share being re-issued as the original copy was lost.**

William Acraman Jnr; share no 6; bought on Jan 3 1823; he died on Oct 10 1830; and on Dec 2 1830, the share transferred to Alfred John Acraman; he was declared bankrupt. On 6 Oct 1842 the share was bought by C.P.B. Honell, timber merchant,

Daniel Wade Acraman; share no 7; bought on August 1 1822; he was declared bankrupt and on March 2 1843 the share was bought by. Thomas Thomas Jnr; soap merchant. On Nov 6 1845 it was bought by Charles Thomas.

William Edward Acraman; share no 8; bought on August 1822; he was declared bankrupt; on Dec 1 1842 it was bought by Jacob Moses Alman; on June 1 1843, bought by Henry Robertson, surgeon.

Levi Ames Esq; share no 9; share no 472; first one bought Sept 9 1820; the second on Feb 16 1825; share no 9 was transferred to Lionel Ames, gentleman on March 1 1849; share no 472 to Henry M. Ames esq. on March 1 1849.

John Ames jnr; share no 10; share no 445; first one bought on Sept 29 1820; the second on Jan 11 1825; no 10 goes to Henry Olive, drysalter, on 2nd June 1831; he died in 1834 and it then went to Lionel Olive on May 7 1835. Olive, Lionel, died June 17 1865. Share no 445 went to the Rev. Robert Watson on 15 Jan 1825; to the Rev. Henry Rogers on 7 Nov 1839; and on July 5 1849 to Revd. Benjamin Winthrop, M.A.

George Henry Ames; share no 11; bought Dec 4 1820; share no 486; bought March 12 1825; share no 11 not transferred; share no 486 not transferred.

William Ariel (now Myles Ariell; **share no 12**, bought Sep 13 1820; he died on March 31 1840; share transferred to James Godfrey M.D. on August 5 1840; he died Sep 27 1861; **on Dec 5 1861, share transferred to Samuel Martyn M.D.**

Hugh Duncan Baillie; (Colonel) **share no 13**; bought Dec 17 1817; **share no 14**; bought Dec 17 1817.

Robert Baker; **surgeon**; **share no 15**; bought in **stages**, on March 27 1809; March 20 1810- May 17 1810.

George Baker; **merchant**; **share no 16**; bought in **stages**; March 27 1809; March 20 1810; May 17 1810; this share transferred to Robert Baker on April 24 1824; on April 7 1825 to John Champney Swayne; and on October 7 1852 to **Samuel Henry Swayne, surgeon**.

Slade Baker; **Linen merchant**; **share no 17**; bought on March 27 1809; March 20 1810; May 17 1810; this share transferred to Robert Baker on April 7 1825; on June 5 1828 to Robert Baker and James Joseph Whitchurch; executors of Slade Baker deceased; and on March 7 1868, to William Joseph Fedden, **sugar broker**.

Henry Ball, jnr; **solicitor**; bought share no 18 on Feb **24 1824**; **and share no 478 on Feb 22 1825; share no 18** transferred to John Shorland, **surgeon** on Oct 7 1830. Share no 478 transferred to William Innes Pocock on Oct 7 1830; he died on Feb 18 1833; on November 6 1834 the share went to Frederick Russell; and on Nov 6 1851, it transferred to Matthew Davenport Hill, **Barrister-at-Law**.

Jesse Barrett; gentleman; bought share no 19; on April 10 1809 (E51 and March 14 1810; on Nov 4 1841 it transferred to Edward Phelps, gentleman, Orchard Street.

Revd. Thomas William Barlow; prebendary; bought share no 20; March 2 1821; he died in 1822; share transferred on Feb 1 1827 to Frederick William Frampton; he died on Jan 12 1830; on Oct 7 1830 the share transferred to Henry Weman Newman; and on Sept 9 1844, to Michael Clark, chemist, who died on Oct 14 1862.

John Barrow, esq; bought **shares no** 21; on Jan 16 1821; and no 462 on Feb 2 1825; share no 21 was transferred to Peter F. Aiken esq; (Banker) on April 7 1836; to Revd. Robert W. Burton December 1 1842; to Thomas Kerslake, Bookseller on Feb 6 1845; and to Abraham Moseley, Dentist; on March 6 1845. Share no 462 transferred on May 5 1825 to Charles Barrow; he died on Sept 16 1825; and share went to George Neale Barrow on June 2nd 1831; on Octo 3 1834, John Barrow esq. was declared a Bankrupt.

Bartholomew Barry; share no 22; bought in April 19 1809; and Jan 4 1823; no transfer.

Abraham Gray Hariord Battersby; share no 23 and 24; he died on May 7 1851; and on both occasions the shares were taken over by John Battersby Hariord esq; sharesbought on the same day, Jan 23 1818,

Rt. Hon. Charles Bathurst, of Lidney Park; purchases shares number 25, 26, 27 and 28; bought between April 1809 and May 1810; share no 25; transferred May 3 1827 to Michael Hayman, painter; and on Jan 28 1830 to John Fowler, painter; share no 26; transferred May 3 1827 to Stephen Hague, gent; on 2 June 1836 to James Cunningham, merchant, of Rodney Place, Clifton. He died Aug 14 1852; share then becomes the property of the Institution on Oct 5 1854. Share no 27; transferred to Miss Susan Webb, on May 3rd 1827, and on Nov 4 1846 to Reverend James Heyworth. Share no 28: transfers on May 3rd 1827 to Charles Ludlow Walker esq.

Reverend Richard Bedford: Precentor; share no 29; bought between April 1809 and Feb 1822. Transferred on February 2 1843 to Thomas Sanders Parnell, solicitor; and on Sep 2 1852 to Richard Manning Hayman.

Very Rev. Henry Beeke, D.D., Dean of Bristol: share no 30; bought on Dec 17 1817; and no 494 bought on Oct 4 1825; share no 30 goes to William Strong, bookseller, on July 6 1837, Beeke having died on March 9 1837. Then on August 3 1837, transferred to William Benjamin Carpenter, (surgeon) then on February 6 1845 to Fev. Thomas Michael McDonnell. No 494; to William Falls, (surgeon) on Dec 2 1830; then to: John Moore on Feb 6 1834,

John Britton Bence, merchant; deceased, share no 31; bought March 14 1820, Transferred on April 7 1825 to John Moulton Bence.

John Moulton Bence: share no 32; bought March 14 1820;

no transfer.

George Bengough, solicitor; **share no 33**; bought Feb 1 1820; **no transfer.**

Joseph Beete; share no 34; bought May 7 1823; no transfer.

John Betts; share no 35; bought Feb 9 1822; died Oct 4 1832; this was then transferred to Richard Hancock Biggs on March 6 1834; on May 4 1837 to George H.K. Twaite, Accountant. Thence, to John H.B. Thwaites on Feb 7 1850, (this man was a dentist by profession.) The share was finally relinquished to the Committee of the Institution on March 6 1852.

Benjamin Bickley, esq., share no 36; bought between April 1809 and June 1810.

Richard Biggs, **Devizes**; share no 37; bought Dec 21 1822.

Richard Blakemore, The Leys, Monmouthshire; shares 38 and 39; bought Jan 3 1824; **share no 39 transfers to James Mullins Scott**, merchant on Nov 6 1828; and thence to Francis Ker Fox M.D., on 4 Nov 1830.

George G. Bompas, M.D., **share no 40**; bought from Dr. Cox Nov 1822. **Bompas** died Feb 20 1847. Share relinquished to the Institution Nov 3 1853.

Charles Carpenter Bompas, esq. Share no 41; -bought Nov 15 1822 (from Dr Cox); this transferred on Dec 4 1824 to *Joseph Cox of Fishpounds*. On Sept 1 1825, to Joseph Grace Smith, Esq. Relinquished on 7 Aug 1856 to the Committee.

Charles Watkins Bowden; no 42; bought Jan 9 1823;

no transfer.

Richard Bright, esq., buys nos 43, 44, 45, 46, 441. These are all bought on Dec 15 1820 (first 3) and on Jan 8 1825 the 5th number 441 is bought. So 5 shares in all, no 43; Richard Bright dies Jan 25 1840; 43 goes to Henry Oxley Stepehens, surgeon, on April 4 1844, no 44; to James John Leman, solicitor, on April 4 1844; no 45 to Robert Bright, merchant, on April 10 1824; no 46 to Henry Bright, esq., M.P. who died March 26 1869, on April 24 1824; no 441 to James Lewis, gentleman, on April 4 1844.

Henry Bright, esq., M.P; share no 47; bought Jan 5 1824.

Lonbridge Bright, esq. (deceased); share no 48; bought between March 1809 and May 1810. Transferred to Samuel Bright on Feb 14 1824.

Benjamin Heywood Bright; died August **4 1843; shares no 49;** 50; these **shares** bought Dec 15 1820. No transfer.

The Rt. Rev. John Kaye, Lord Bishop of Bristol; no 51, bought Oct 23 1823. Transferred to the Rev. James Daubeney, May 1 1828. Henry Browne; Banker; share no 52; declared a bankrupt Dec 21 1825; on Feb 1 1827 the share is transferred to George Eaton, jnr, Iron merchant, Eaton died Feb 24 1839. LErowne a jeweller, 37 Corn \$t, and 16, \$t, James Flace7.

Robert Bruce, merchant; share no 53; bought **March 39** 1820; then transferred to Thomas Reynolds, Merchant on March 7 1839; Reynolds died June 2 1854. Shares then presented to the Institution on Feb 1, 1855.

Benjamin Gustavus Burroughs (deceased); share no 54; bought Jan 2 1823; transferred on December 4 1834 to Richard Burroughs.

Robert Bush, merchant; buys shares no 55, 56, 58; Robert Bush died on 4 March 1829. His first share was bought April 1809 and the rest Feb 9 1822; no 55, transferred April 7 1831 to Thomas Carlisle, Clifton; then on April 3 1834 to Alexander Farebrother; and on 3 March 1853 to Philip Aristie Smith, Barrister. No 56, transferred on Augu 6 1829, to Charles Bowles Hare. He dies Aug 3 1855. No 57, transferred to George Bush: Nov 3 1825. No 58, transferred to Henry Bush: merchant on June 19 1824.

John Bush, solicitor; **share** no 59; bought on Jan 4 1823; transferred on Oct 6 1836 to Abraham Snell (victuallers); then March 4 1841 to Jacob Moses Alman (gentleman); then Richard Lowe (surgeon) on July 1 1841; he died Feb 9 1850. Transferred on Oct 6 1853 to Richard Godfrey Lowe, surgeon.
Edward Butcher; share no 60, bought March 31 1824.

Rev, Dr, Lant Carpenter; share no 61; then Rev Doctor died on April 5 1840 and on March 1 1860 his share was transferred to William Lant Carpenter. He bought **another share, no. 436,**

on Jan 5 1825. (The 61 had been bought Jan 29 1820). No
436: went to William Browne (bookseller) on Jan 1825, on
 the 3 Feb 1825 It was returned to the Rev. Lant Carpenter
LL.D. as a 'Privileged Share:' see Annual Report for 1827
pps. 60 and 62). On Nov 6 1834, it was transferred however,
 to John Addington Symonds, M.D. He died on Feb 25 1871.

Andrew Carrick, M.D.; share no 62. Bought on April 28
 (£5) 1809 and April 4 1810 (E20); Carrick died on June 14
 1827. No transfer.

Robert Mathew Casberd; **share no 63**; bought on April 18
 1809. No transfer.

Michael Castle, esq; **shares no 64**, 65, 67; £20 paid on
 April 8 1809 and £80 paid on Nov 29 1821, (Michael Castle
 and Co; Malt Distillers, Cheese Lane, St. Philips/. No
64 was transferred on Nov 3 1826 to Young Sturge, Land
Surveyor; and on Oct 1 1846 to William Sturge, Land Surveyor.
 No 65; was transferred on Nov 3 1826 to Young Sturge,
Land Surveyor; on Dec 7 1826 to John Adams Ames, wharfinger;
 on Oct 3 1833 to John Longmore **esq.**, on Jan 1 1835 to George
 Southnell; on June 7 1838 to Thomas Foster, jnr; architect;
 and on May 3 1849 to Thomas Kerslake, Bookseller. Share no
 66: on Nov 3 1826 to Young pturge, Land Surveyor; on Dec
 7 1826 to John Adams AAes, Wharfinger; on Oct 3 1833 to
 John Longmore esq., and finally on Oct 2 1834 to Harman
 Visger. Share no 67: on Nov 3 1826 to Young Sturge, Land
Surveyor; on Dec 7 1826 to John Adams Ames, Wharfinger;
 on Dec 7 1826 to John Mills, Printer. And on April 7 1831

to Frederick Terrell,

Thomas Castle; share no 68; Castle was a Distiller, and died on June 12 1827; share then transferred to Matthew Bridges, gentleman, on June 1 1837; and on Nov 1 1838 to Jacob Wood, gentleman of Cornwallis House, Clifton. Castle also owned share no 69; they were bought between April 1809 and Feb 1818 (when £40 was paid); share no 69 transferred to William Henry Castle on Nov 3 1831; to Jacob Moses Alman on June 4 1840; on July 2 1840 it went to Revd. John Stirling; and on Jan 5 1854 was relinquished to the committee of the Institution.

Michael Hinton Castle; share no 70 and 71; bought between April 1809 and August 1821 (when £40 was paid). M.H. Castle was also a distiller. Share no 70 transferred to Henry Abbott, solicitor from Bower Ashton, on September 4 1845. Share no 71 transferred to Richard Boley, surgeon, on Oct 2 1845. He died March 11 1850; on August 6 1857 the share was relinquished to the Institution.

John Cave esquire; bought shares no 72, 73, 74, 75; they were all bought on July 25, 1821. Cave died on March 27 1842; share no 72 was not transferred.

John Cave; Brentny House; Gloucestershire. (Bankers). Share no 73 went on July 4 1867 to George Squier Bryant, gentleman, Share no 74 went on July 4 1867 to George Squier Bryant, gentleman. Share no 75 went on July 4 1867 to George Squier Bryant, gentleman.

Stephen Cave esq., alderman: shares no 76 and 77; and 442; bought on May 1 1821 C£501 and Jan 8 1825, Share no 77 was not transferred. Share no 76 went to George Cave on Jan 28 1830; to Job Harril, auctioner on Nov 1 1838. He died on May 25 1843; on Feb 6 1845 to John Milton Lewis, painter, etc. He died on May 1 1864. Share no 442: not transferred.

Daniel Cave esquire: shares no 78, 79, 443. Bought on May 1 1821, and Jan 8 1825. 78 and 79 are not transferred; nor is 443.

Edward Rolle Clayfield: died April 1825: bought shares no 80 and 81. Shares bought on Jan 7 1821; no. 80 relinquished to the Committee of the Institution, March 6 1856. Share no 81 sold to Edward Gee, surgeon on Dec 2 1830.

Charles Thornton Coathupe: shares no 82, bought on Jan 7 1823; no transfer.

John Cobbam: share no 83; bought between April and Oct. 1809; he died on 26 Oct. 1811. No transfer.

Isaac Cooke: solicitor; share no 84 and 85; bought on May 24 1809 (£10) and Sept 13 1820 (E40). No 84 transferred to George Cooke, solicitor on June 19 1824; and on the same day, to William Pyle Taunton; he died Oct 13 1850. On Feb 6 1845, the Share was relincauished to the Institution; share no 85 Went on June 19 1824 to Isaac Allan Cooke, solicitor.

Septimus Cookson; share **no 86**; bought Aug 21 1821; he died on Sept 30 1828; on Nov 5 1829 the share went to John Elton, Redland. On Sept 7 1843 to Alfred Elton, gentleman. On Dec 7 1848, to Robert Henry Taylor, of Berkeley Square. On 6 March 1851, to the Very Rev. Gilbert Elliot, D.D., Dean of Bristol.

Richard Colston; share no 87; bought on April 20 1809; he died and the share went on March 1 1827 to Richard Colston Mais. Rev. William Daniel Conybeare; share no 88. Bought Nov 2 1822; on May 2 1859 the share was presented to the Institution by the owner. (see Proc.Gen.Com.)

John Courtney, Banker. Share no 89; £5 on April 8 1809 and £20 on Sept 13 1820. Courtney was declared a Bankrupt on 14 Aug 1827. The **share was transferred** to William Diaper Brice, solicitor, on Sept 4 1828. He died Feb 18 1849. Thence, on William Brice, solicitor, Aug 2 1849.

John Brent Cross; share no 90. Bought Jan 4 1823; transferred to John Hall, gentleman, on March 1 1849. Hall lived in Berkeley **Square**. **Share presented** to the Institution on Dec 2 1852.

James Cunningham; merchant, Share no 91; bought Aug 23 1820; transferred to William Ball, solicitor on Nov 5 1832; to Josiah Grace, corn merchant on Nov 3 1842. Died March 25 1868; then transferred to Abraham Riddon Grace, on Oct 1870.

Thomas Daniel; merchant & alderman; Daniel died on April **6 1854**; bought shares **no 92, 93, 94, 95. These** bought on April 13 1809 (E20) and Dec 17 1817; (£80). Only no 95 **was transferred**, to Thomas Daniel Junior on Feb 14 1824. Thomas Daniel also bought **share no 428;** on Jan 1 1825. Transferred to Jeremiah Hill junior; on Oct 4 1827.

Henry Daniel; merchant and surgeon; share no 96; no 471; no 96 bought Nov 29 1822; no 471 bought Feb 14 1825. He died April 21 1859. Share no 96 not transferred. On May 5 1825, no 471 was transferred to Frederic Granger.

George Daubeney; share no 97, 98, 99, 100; (£15 paid on March 17 1810; £85 paid on July 9 1812) no 97: to George Matthews Daubeney esq on July 6 1854. /_George Daubeney himself died on March 29 18517. No 98: To Thomas Lyddon **Surrage, surgeon. On Jan 22 1829. T.L.S. died on March 31** 1863. Share then transferred to R. Beadon Ruddock, surgeon.. On August 6 1863. No 99: to Daniel Harson Collings, on March 5 1829; and on Sept 3 1868 to Henry Hyatt Collings. No 100: to Joseph Walters Daubeney; on March 2 1843. He died on Jan 28 1863.

Mrs Martha Daubeney; shares no 101, 102; bought Nov 23 1822; shares no 101; to Arthur John Knapp on April 7 1831; to Edward Gillett on Oct 2 1834; to James Gillett, cutler, on Oct 6 1836. Share no 102; goes to Revd. Andrew Alfred Daubeney on June 5 1824. He dies on June 20 1852.

David Davies, M.D.; share no 103: bought April 19 1809; Feb 14 1824 (£20); he died Feb 5 1844; on June 1 1848 the share transfers to Thomas Kerslake, Bookseller.

Richard Hart Davis, esq. M.P. (Mortimer House, Clifton); shares no 104, 105, 106, 107; paid £20 on April 10 1809; and £80 on Dec 18 1817; none of them were transferred.

Hart Davis esq.; shares no 108; 109; bought April 10 1809 (£20) and Dec 18 1817 (£30) No transfer.

Hart Davis, solicitor; share no 110, 111; bought Feb 11 1822; no transfer. Declared a Bankrupt in 1834.

Mark Davis, esq.; share no 112, 113; he died March 1832. Bought on April 14 1809; June 28 1809; Nov 16 1820. (£10 of this was actually used to purchase apparatus; see Com. Book Feb 14 1824). No transfer.

Martha Davis (Mrs); shares no 114, 115 (Deceased) Bought March 20 1820; Dec 4 1822. No transfer. Miss Ann Susannah Davis; shares no 116, 117; she died Feb 19 1830; bought March 20 1820; Dec 4 1822. Share no 116; goes to Thomas Richard Frampton, Clifton, Sept 7 1826; and on May 1 1834 to Edward Frampton. Share no 117: to John Howell, merchant, on July 2 1829; died Nov 29 1854.

William Weaver Davies; share no 118; bought Dec 1 1820; transfer on Dec 7 1843 to Thomas K111 anm H^11, gentleman, Henry Thomas de la Beche; share no 119, Bought Nov 2 1822. Transferred to the Rev. James Taylor on Jan 7 1830; and on June 6 1850, to Robert Evans, D.C.L; Grammar School. He died Oct 14 1854.

William Dickenson, esq., M.P.; **shares** no 120 and 121. Bought April 19 **1809**. **No transfer.**

William Dowell; **share** no 122; April **3 1824**; **transferred** to John Dowell, Hatter, 3 Jan 1828.

Robert Dyer, M.D., **share** no 123; April **1809** (E 5) and April 10 1810 (E 20). **He died on 16 Feb 1830. Share not** transferred.

Rev. John Eden; **share** no 124; £5 paid on August 5 1809; £20 paid Jan 29 1818. Rev. Eden died on December 25 1840. His share was transferred to the Rt. Worshipful James Gibbs, Mayor of Bristol, 1842-1843. He died on March 5 1853, having held the share from March 2 1843.

William Elton, merchant; **share** no 125, 126, 127, 128; £20 paid on April 8 1809; (E20) March 29 1810; March 24 1820 (£60); he died (no date given). Share 125 to Edmund Henry Waller, transferred on April 3 1828; Bankrupt: Oct 5 1830. Thence to Jacob M. Alman, on 8 Feb 1831; and on July 4 1861, to Conrad Finzel, sugar refiner; **share** 126 to Charles Hodges, on June 5 1828; and Jan 22 1829; Rev. John Manley, A.M. Share 127 on March 27 1824, Revd. Richard Carrow. Then relinquished to the Institution Feb 6 1851. Share 128 on March 27 1824, to Joseph Cookson, merchant. Died 25 Oct 1865. Share then relinquished to the Institution on June 7 1866.

William Brame Elwyn: **share** no 129; £5 on April 15 1809 £20 on Feb 9 1820. Transferred on Dec 3 1829 to Charles

Henry Payne esq.

John Bishop Estlin: surgeon. Share no 130; share no 473.

No 130 purchased March 2 1820. No 473 purchased Feb 18

1825. J.B.E. died on June 9 1855. No 130 was not transferred.

No 473 was transferred to Augustin Prichard, surgeon.

On March 6 1845.

John Fergus: share no 131; bought April 21 1820; transferred to George Rogers, surgeon, on March 7 1844.

George Fisher, merchant; share no 132; bought Dec 20 1817; transferred to Gilbert Lyon M.D. on 22 Feb 1829.

Francis Fisher, merchant; bought shares number 133 and 134. £10 on April 19 1809; £20 on April 18 1810; £20 on Dec 17 1817; Fisher died on Jan 9 1837. No 133 transferred to Edward Joseph Staples, surgeon on Nov 7 1839. Staples was declared a Bankrupt on same day in 1846, thence to Thomas Cairncross on March 4 1847; finally relinquished to the Institution on Aug 4 1853. No 134 transferred to James Fogo **Bernard, M.D. on May 1 1834.**

Richard Llewellyn Fisher; share no 135; bought Feb 1818. Declared a Bankrupt on 14 April 1829. On August 6 1829 transferred to John Buller Colthurst; then to John Colthurst on Feb 7 1833,

Edward Long Fox, M.D., share no 136; bought Dec 7 1821; no transfer recorded,

Henry Hawes Fox, M.D., share no 137; bought Feb 23 1818;

transferred to Revd. William Charles Fox, M.B., on March 4 1852.

James Narraway Franklyn; nos 138 and 435; no 138 bought

Jan 4 1823; no 435 Jan 4 1825; no 138 transferred to

John Franklyn, solicitor, on Jan 4 1844. No 435 transferred to Edward Prichard, wine merchant, on March 5 1840; thence to William White, wine merchant, August 7 1845; then John Harvey Junior, wine merchant, on March 3 1864.

William Fripp, esq. (soap manufactuers and chandlers)

Alderman; **shares no** 139, 140, 141; all bought March 4

1824; W.F. died on June 10 1829. No 139 transferred to

William Jenkins (died Nov 6 1833); the Very Rev. Thos

Musgrave D.D., and Dean of Bristol, on June 1 1837; then to

the;Very Revd. John Lamb, D.D., Dean of Bristol. He died

18 April 1850, having occupied since Feb 8 1838. Then went

to William John Norris, gentleman, on June 6 1850; he died

Feb 1 1853. No 140 transferred to William Ridgway, merchant,

on Sept 3 1829; to Andrew Allen, May 1 1834, he died Dec 3

1850; and then on Jan 2 1851, relinquished to the Institut-

ion. No 141 transferred to John Robert Greer, merchant, on

Sept 3 1829; to George Josh. Bompas, M.D., on June 4 1840.

Relinquished to the Institution Nov 3 1853.

James Fripp; shares no 142; on April 14 1809, £10 given;

Nov 26 1822 given. He died on Nov 21 1850,

Edward Bowles Fripp, merchant; share no 143; bought Feb

28 1824. Transferred to Edward Bowles Fripp jnr. on Oct 6

1842; thence to Henry Edward Fripp, **M.D. on June 4 1868.**

Daniel Fripp, merchant; share no 144; bought March 2 1842; transferred to Thomas Evans Grindon, 6 Nov 1828. Then to Edward Thomas Inskip on 2 March 1871.

Charles Bowles Fripp; share no 145; bought on April 6 1824; C.B.F. died on August 6 1849. Share transferred on Jan 6 1853, to Rev. Damuel William Wayte.

Charles Frost, stationer; no 146; b. Jan 21 1822. On Dec 6 1827, goes to Charles Muskett, stationer. On Dec 6 1828, returned to Charles Frost. On June 4 1829, goes to George Louis Stott.

Anthony Gapper, M.D; share no 147. Bought Sept 17 1823. Relinquished on the 7 April 1853 to the committee of the Institution.

Thomas Garrard; chamberlain; share no 148. Bought May 3 1823. Not transferred.

John Gardiner, esq; share no 149; bought Nov 7 1821; not transferred.

Philip George, esq., share no 150; bought in stages; July 27 1809; (£5); May 16 1810; (£10) Nov 21 1822 (£10); then transferred on Feb 21 1824 to Philip George Jnr. merchant; and on Feb 15 1827 to Henry Prichard jar; oil merchant.

James George; merchant; share no 151; bought June 7 1821; not transferred; until Feb 28 1824, J.G. having died on an ungiven date in 1822.

James George jnr, esq., **share no 152**; bought **in stages** April 12 1809; March 13 1810; May 19 1810. **Transferred** to the Institution on Dec 6 1860.

Christopher George, Redcliffe Hill, lead merchant; **shares** no 153 **and 468**. **Share** 153 bought June 16 1821; **share no** 468 bought Feb 11 1825. No 153 transfers to Robert Lan, Iron merchant on April 5 1849. No 468 transfers to Rev. Joseph Cross, precentor on Sept 1 1825; to the Rev. John Surtees, A.M. on July 3 1845; and to the Institution on July 3 1856.

Alfred George, Brewer, of Porter. Share no 154; bought March 16 1824. Not transferred.

Stephen George, Sugar Refiner. Share no 155; bought May 15 1809 and May 3 1823. (E20). George was declared a bankrupt on 11 March 1826. On April 5 1827, no 155 transferred to Richard Biggs, accountant. On Jan 22 1829, to Thomas Jones jnr. of Stapleton. On May 4 1854 it was relinquished to the Institution.

William Gibbons; no 156; bought April 1809 (ES) and Dec 31 1823 (E20). Transferred to John Gibbons, gentleman on May 5 1824. Then on Jan 26 1826 it went to John King, surgeon.

George Gibbs; merchant, Shares no 157, 158; in stages, On April 7 1809, March 13 1810 and January 19 1818, Both these shares transferred on Nov 1 1827 to George Gibbs, Knole Park. Gibbs, a merchant also owned shares no 159, 160, and 479.

George Gibbs, inr, Merchant, Knole Park. **159, 160, 479**,
157, 158; no 159 bought April 1809; March 13 1810; June
19 1818; not transferred. No 160 same as above. No 479
bought Feb 25 1825; not transferred. No 157 bought Nov 1
1827. Not transferred. Gibbs died on March 28 1863.

Rt. Hon. Robert Lord Gifford, Recorder. **Share no 161;**
(Baron Gifford); April 15 1823. Died Sept 4 1826. Died and
share no 161 transferred to Daniel Burgess, solicitor. He
died on April 16 1864.

Rev. John Joseph Goodenough, D.D; share no 162; and no
475. The first bought on Sept 19 1820. The second on Feb
18 1825. No 162 transferred to George Muston, chronometer
maker on July 3 1845. He died July 16 1849. Share went to
the Institution on Nov 3 1853. No 475 went to Thomas Hope,
clerk on Dec 1 1825.

Samuel Goolden, sugar refiner. Share no 163. Bought June
16 1821. Transferred on April 1824 to Revd. Thomas Allies.
Then on May 7 1829 to Revd. John Hall.

William Goldney; **share no 164**. Bought Nov **26 1822**. He
died Jan 24 1850. Share transferred to Francis Bruford,
merchant on Oct 5 1854.

Henry Goldwyer; surgeon, Share no 165, May 20 1809 and Nov
16 1822. Died May 28 1845,

Samuel Gomond; gentleman, **Share no 166**; bought **March and**
April 1809. Transferred to Thomas Elias Danson on Dec 18
1824. On April 7 1831 to William Wallen Brock, **M.D., and on**

April 3 1834 to John Stanton, surgeon.

Rev. Walker Gray; **share no** 167; bought Nov 19 18221 he died Oct 6 1845. On June 3 1847. The share transferred to John Fisher, wine merchant.

Charles Gresley; share no 168. Bought between March 1809 and May 10 1810. Transferred to Jospeh Ball, merchant on Sept 1 1825; to Meshach Britton, solicitor on Jan 2 1834; and on Dec 5 1850 to Frederick Brittan, M.D.

Thomas Griffiths, /St James Barton/Apothecary; share no 169; and no 452; bought on Feb 10 1818 and Jan 19 1825.

169 transferred to Rev. Thos Griffiths on June 6 1839; the first Thomas Griffiths having died on May 22 1838. Share relinquished to the Institution on Jan 3 1856. No 452 to Revd.Thos Griffiths on June 6 1839; and to Joseph Griffiths Swayne, surgeon, on Oct 5 1848.

Join Rock Grossett, esq., M.P., no 170; on April 8 1809 (E5) and April 25 1820 (E20) No transfer.

Joseph Guest; solicitor; share no 171; bought Feb 24 1818. Transferred to Rev Seth Burge Plummer, April 7 1831.

Then_ William Plummer jnr. Jan 3 1833. On Aug 4 1836 to William Henly Morgan; on Sept 7 1837 **to James Wigan, Solicitor. And on Sept 16 1841, to Richard Tate Stoate.**

John Josiah Guest, esq., of Dowlaisf share no 172. Bought May 23 1823. Not transferred.

Lord Grenville; bought **2 shares**, one on July 11 1832; the other on April 24 1824. On both occasions however he donated £50, i.e. £100 in all in order to become a Life Member. But the money was transferred to the Institution Annual Income Account. Lee Committee Book April 24 18247.

John Mathew Gutch; shares no 173 and 454; no 173 bought on Feb 24 1818, and no 454 on Jan 21 1825,

Charles Hare; merchant. Died March 13 1840; shares no 174, bought March 5 1824. Transferred on July 2 1840 to Charles Bowles Hare, merchant; on May 6 1847 to John Hare, merchant.

John Hare, jnr. merchant. Share no 175. Bought April 20 1809 and Feb 9 1822; N.T. William Ody Hare; solicitor. Share no 176. Died Oct 1868. Share bought on Feb 24 1818; N.T. John Kerle Haberfield; solicitor. Share no 177. Bought March 26 1824; relinquished to the Institution on December 2 1858.

Robert Harding; share no 178. Declared a bankrupt on 14 August 1824. Share had been bought on March 31 1824. On August 2 1827 it transferred to Charles Henry Payne. On July 2 1829 to Richard Tate Stoate. On Oct 7 1830, to the Rev. Peter Guillebaud. Then on Jan 25 1860, it was relinquished to the Institution,

John Scandret Hariord, Esq., shares nos, 179, 180, 181, 182. £20 paid on March 27 1809. £40 paid on March 13 1810, and £40 paid on Jan 23 1818. J.S.H. died on April 16 1866. No 179 and 180 not transferred. No 181 to John Mowat

Woodward on Jan 24 1829. To Rev. Richard William Lambert,
on 2 Sept 1830; and to the Institution on Feb 7 1856.

No 182: on 6 Dec 1827 to John Champeny Swayne. On May 1
1845 to Charles F. Sage, Gentleman.

Rev. Alfred Harford: share no 183. Bought Jan 23 1818.

(N. T.)

Charles Gray Harford: share no 184. Bought on April 7
1809; April 18 1810; Jan 23 1818. (N.T.)

William Henry Harford: share no 185. Bought Jan 23 1818;

(N. T.)

Thomas Harris; Distiller. Share no 186. Bought April 1 1824.

(N.T.)

Edward Harley; Iron Merchant. Share no 187. Bought Dec 28
1822. He died March 8 1850, (N.T.)

John Hart; Banker. Share no 188. He died May 7 1829,
having bought on Feb 26 1824, and April 7 1809, (the usual
£5 gesture). Transferred on Jan 7 1830, to Samuel Harford
Lury; and on Jan 2 1834 to Revd. John Newport.

William Hartley; solicitor. Share no 189. Bought Oct 2
1830. He died May 31 1826. Share went on Feb 1 1827 to Sarah
Hartley.

Aaron Hartnell; share no 190, Bought Jan 9 1823. Not
transferred.

Sir Edmund Craddock Hartop ; shares no 191, 192. Bought Feb

6 1821; he died June 10 1833. **Shares** transferred to the Institution on Sept 1 1853.

William Harwood; share no 193. Bought Feb 12 1820; transferred to John Ballard Harwood on April 10 1824. On Jan 1 1829 to John Ebenezer Bennett; on Dec 6 1832, to Richard Bennett; he died Sept 19 1850. Relinquished to the Institution on June 5 1851.

John Haythorne esq. , alderman. (merchant, Cooper's Hall, King St); shares no 194, 195, 196, 197. All bought on April 25 1820. Numbers 194, 195, not transferred. No 196 to Rev. Joseph Haythorne on April 24 1824, and to the Institution on Sept 1 1853. No 197 to Rev. William Knight on April 24 1824.

Thomas Heaven; Bought April 18 1809 (ES) and May 29 1810; **transferred** on April 6 1826 to **Cam Gyde Heaven**. He died on Sept 4 1865. Share no 198.

Ames Hellicar jnr; iron-merchant. **Sahre no** 199, bought March 12 and May 10 1810; (N.T.) (no date) died.

Rev. John Hensman; share no 200; bought Jan 24 1824; he died April 23 1864. Share transferred to Rev. Edward Protheroe Vaughan, M.A. of Wraxall, Somerset, on Sept 7 1865.

William HLggs; **share no 201**, Bought May 8 1809 and May 26 1810 (£201. W.H. was declared a Bankrupt, On November 20 1824 the share went of James Maze, merchant. Died April 1831. Eventually fell to the Institution August 4 1870.

William Hetling, surgeon. Share no 202; bought an 16 1824. Transferred on March 4 1830 to George Hilhouse Hertling; and on May 6 1852 to Thomas Terret Taylor, Jeweller.

George Hilhouse, esq., Alderman. Share no 203; bought Jan 24 1821; he died on Dec 24 1848 (N.T.)

Abraham Hilhouse; share no 204; bought April 23 1821. Died on March 15 1867; the share was then transferred on Nov 7 1867 to George Ashmead; land surveyor.

Sir John Cox Hippisley, Baronet; share no 205 taught March 15 1822; he died on May 2 1825. (N.T.)

Edward Hodges; Mus.D; share no 206; bought March 14 1820; transferred on May 1 1834 to George Wallis, M.D., and on Sept 4 1862 to the Institution.

Stephen Horsley; gentleman; share no 207, bought in stages; April 1809, April 11 1810; and May 19 1810. Died 18 May 1830. Then on March 7 1833 went to Stephen Horsley Stedder. He died on May 7 1863.

John Howell; M.D. share no 208. Bought on April 5 1824. Not transferred.

Richard Humfrey, gentleman. Transferred on Feb 1 1844 to James Humfrey, gent. Bought originally on April 14 1809. But in the Register of Proprietors the buyer is called Rev. W.G. Humfrey, not Richard Humfrey, ent. Share transferred for record time to Ambrose Evans Nash, solicitor on Jan 6 1853.

Richard Hunt, Iron merchant, Share no (N.T.) 209,
Bought on Jan 4 1820 , and 413 . Bought Nov 26 1824, (N.T.)

William Hurle, Linen Merchant. **Share no 211**. Bought April 29 (E5), 1809; and Dec 24 1817. Transferred to Revd. James Carter, Minor Canon. And on May 8 1824 to William Bowrn **Haynes**. On May 6 1830 to William Craven, Solicitor. Then, on Dec 6 1849, to the Institution.

John Hurle, Linen Merchant. Share no 212. Bought April 29 1809 (E5) and Jan 5 1818. He died August 27 1855.

Frederick Charles Husenbeth; **shres no** 213, and 214. Bought April 12 1809. Husenbeth was a Provision Curer. They were bought in April 1809. No 213 transferred to George Davey, bookseller on August 6 1846, then on Sept 2 1847 to Thomas Edward Heath, bookseller. No 214 transferred to Ferdinand Husenbeth Lorum on Jan 3 1833; to F.C. Husenbeth on August 4 1836; on Sept 1 1836 to Frederick Anthony Hensler; on Feb 4 1841 to Samuel Frederick Milford, Solicitor. On July 7 1842 to William Lloyd M.D., on May 7 1846 to Thomas Lighton, gentleman. Then on April 3 1856 to the Institution.

Thomas Jarman, solicitor. Shares no 215 and 216. Bought Jan 15 1818. No 215 transferred to Robert Bruce jnr, merchant on April 10 1824; then to the Institution on Jan 3 1856,
No 216 transferred to William Bruce, merchant on April 10 1824.

Samuel Jackson. Share no 217. Bought March 15 1820. Transferred on Dec 13 1823 to Francis Fisher jnr. merchant.

On March 5 **1829 to Samuel** Waring, merchant. **He died on June 27 1839**. On Dec 5 1839, transferred to Francis Jarman, solicitor. **He died** March 10 **1849**. Then went, on Feb 6 1851 to Richard Lillington. Finally on **Feb 2** 1871 to the Committee of the Institution.

George Jones; mason. Share no 218 and 219. Bought Feb 25 1818. No 218: N.T. no 219; on March 3 1825, to John Wright Hodgetts; on Oct 7 1841 to Charles Thomas Eales, stamp office. On July 3 1845 to John Cash **Neild esq**; surgeon. Then on May 5 1853 to John Moss Chandler, surgeon.

Rev. William Jones, Clifton. Share no 220. Bought on Jan 27 1820. Transferred on June 5 1824 to Miss Elizabeth Jones. She died Dec 5 1827. Then went on Jan 22 1829 to William Ford Mogg.

Philip Jones; Timber merchant. Share no 221; bought Jan 7 1823. Transferred on Jan 7 1830 to John Davis, **M.D. He** died 17 June 1864. Then went to Major Gronon Davis, R.A. on Nov 3 1864. Then transferred on Feb 7 1867 to John Bowman, solicitor.

Edward Kentish, **M.D.** Share no 222; bought Sept 11 1820. Kentish died on Dec 5 1832. Share transferred to William Ogilvie Porter M.D. on Oct 3 1833. He died Aug 15 1850, Relinquished to the Xnstituti.on on Sept 1 1853.

George Ktnq, esq. Share no 224, and share no 225. Bought on April 13 **1809 and Jan 7 1823**. **Share no 224 transferred**

to Joseph Lax, spirit merchant, on April 10 1824. Then on Feb 4 1841, to Charles Edwards, spirit merchant. And on March 2 1843, to John Curtis jnr. accountant, no 225; transferred to George **Hare**, merchant, on April 10 1824. He died on 29 July 1824. Share then went to John Hare, merchant, on Dec 31 1824. He died on Jan 11 1839.

Richard Poole King, merchant; share no 226. Bought on Jan **9 1824 (N.T.)**

Thomas Kington, jnr; shares no 227 and 228. Bought on May **4 1820 (N.T.)**

Rev. William Morgan Kinsey; **share no** 229. Bought Jan 3 1823. Transferred on Feb 14 1824 to Charles Smerdon, surgeon.

Robert Lax, surgeon. Share no 230. Bought Sept 28 1820. Not transferred.

James Lean; Banker. Share no 231; bought on April 7 1809 (£5) and Jan 3 1823 (£20). He died on July 9 1849. Share transferred on May 4 1854 to Thomas Clements Parr. He died Dec 1 1863.

Sir Thomas Buckler Lethbridge, **Bart.** **Shares no 232 and 233.** Bought in stages; April 29 1809; May 2 1821; and Jan 7 **1824**. No 232 goes to the Institution on Jan 5 **1854**. **No 233** goes to Henry Harfordr soljc^tor on Jan 5 1854, **He died on** March 16 1864 and it Ls then sold to Rey, Frederick William Gotch LL,D, on Nov 2 1865.

John Lewis, Corn merchant. Share no 234. Bought on Jan 7 1824. Transferred on May 5 1825 to John Vining, sugar refiner. Transferred on Feb 7 1861 to the Institution.

James Cossley Lewis; share no 235. Bought Mar 17 1824. Transferred to the Institution on Feb 7 1856.

James Lewis, gentleman, Clifton, share no 236. Bought May 4 1824. Transferred on May 1848 to the Institution.

Andrew Livett, jnr. Solicitor. Share no 237. Bought April 8 1824. Transferred to James Wash, jnr. solicitor on Dec 5 1833. To William Miller on Dec 24 1834. To Caesar Short on Dec 3 1835, to Edward Samuel Dowling on Feb 6 1851.

Robert Lovell, M.D. Share no 237. Bought in two stages, on April 1809 and on Jan 3 1823 (E20). He died (no date) and share was not transferred.

William Peter Lunell; share no 239 and share no 447. Bought on April 22 1809 and Jan 12 1818 (E20); then no 447 on Jan 14 1825. No 239 was not transferred. No 447 was not transferred.

Mary Alicia Lunell; share no 240. Bought March 21 1820. Transferred on Jan 6 1831, to Rev Patrick o'Farell. Then on Feb 4 1858 to Rev, Ferdinand English, D.D; finally transferred on Feb 3 1859 to the Institution,

John Evans Lunell; Share no 241. Bought Sept 21 1820. N.T.

Samuel Lunell; merchant. Share no 242, Bought Sept 29 1820.

Transferred on Feb 2 1832 to Joseph Henry Jerrard LL.D.

Then on March 5 1840 to Col Joseph Jerrard.

Ebenezer Ludlow, Town Clerk. Share no 243. Bought Dec 20

1821. Ludlow died March 8 1851. Share transferred on Jan 6 1870 to Rev. Arthur Rainey Ludlow, M.A.

John Loudon Macadam; share no 244. Bought April 13 1824.

Transferred on July 7 1825 to John Loudon Macadam Jnr.

Then on Jan 4 1838 to John Hellicar, merchant.

Charles McNish; share no 245. Bought . Transferred after the death of McNish, who died on March 25 1829, to Thomas South, gentleman, on May 6 1830. Thence to George Rogers, jnr. on June 5 1834. Thence on Jan 5 1837 to William **James, Surgeon. He died on** Oct 11 1853. Finally transferred on April 2 1868 to William Walter Stoddart chemist.

John Manningford; share no 246. Bought on April 7 1809 (E5) and Jan 3 1823.

Peter Maze, merchant. Share no 247 and no 439. Bought on Feb 12 1818; no 439 on Jan 6 1825. Share no 247. Died on June 14 1849. Share went to Richard Rowe, ship broker, on March 7 1850. Thence on Dec 4 1851 to Henry Andrewes Palmer, Solicitor. Share no 439 went to Rev. Robert Hancock on Nov 7 1850; to Robert Etheridge, Curator of the Institution, on Dec 6 1855. Then to John Keal of Bellevue Academy, Norfield Road on April 1 1858, Then on Jan 2 1862 to the Rev. Isaac Sadler Gale.

James Maze, merchant. Share no 248. Bought June 11 1823.

He died on April ? 1831. Share became the joint property of Revd. Maze W. Gregory; P.W.S. Miley, esq; and A.J. Knapp esq., on Oct 7 1869. On Aug 4 1870. it was relinquished to the Institution.

Peter Maze, jnr. Share no 249. Bought on Feb 21 1824.

Transferred on Dec 7 1854 to William Henry Marshall, gentleman, on Feb 22 1867.

Robert Meaby. Share no 250. Bought Dec 26 1822. He died Sept 26 1824 and share not transferred.

Samuel Mereweather, fruiterer. Share no 251. Bought Dec 10 1823. Transferred on March 3 1836 to George Pullin Hinton. Then on Jan 3 1839 to William Sisson, gentleman. He died Nov 27 1867.

Joseph Metford, jnr. Share no 252. Bought Oct 4 1820.

Metford died on Aug 20 1833. Then on June 5 1834 the share transferred to William Herapath. Herapath died on Feb 13-1868. Share transferred to Oliver Gregory Lowe, gent. on Feb 3 1870.

Philip John Miles, esq., M.P. Share no 253 , 254, 255, 256.

Miles paid up £20 on April 19 1809; he then paid £80 on Sept 12 1820. P.J.M. died on March 24 1845. No 253, 254: not transferred, No 255; Went on Feb 5 1846 to John William Miles, esq., No 256; went on Dec 14 1837 to Philip W. Skynner Miles Esq., M.P.,

William Miles, jnr. (Leigh Court) **shares no 257, 258.**

(Created Barnonet, April 19 1859 Both bought May 27 1823.

N, T.

William Miles, senior Banker. Died Nov 13 1844 at Aix-la Chapelle. Share no 259. Went on Jan 1 1846 to Mrs Harriet Francis Miles (Manilla Hall).

John Middleton; died April 5 1868. Bought March 2 1824.

(Share no 260). N.T.

John Miller, nursery man. Share no 261. Bought Feb 28 1824.

J. Miller was declared a Bankrupt on Oct 15 1836. Share went to John Ballard Harwood, sugar merchant on April 5 1838; and on Jan 4 1844 to Herbert Thomas soap merchant.

John Mills, printer. Share no 262 bought on March 15 1822.

Share no 457 bought on Jan 27 1825. No 262 to Henry James Mills, Printer, **on Sept 6 1849.** No 457 to Ingatius Davis, on Nov 3 1825. William Orchard Gwyer. Share no 458.

John Hodder Moggridge, esq., **Shares** no 263; 264; both bought March 16 1824. **No 263** went to the Institution on Nov 2 1854. **No 264** went to Mathew Moggridge on April 2 1829; relinquished to the Institution Nov 2 1854.

Miss Susannah Morgan; shares no 265 and 266. Bought April 15 1820 and an 22 1823. No 265 went to Thomas Bowman on May 7 1835; to John Bowman, gent on Oct 3 1850; then no 265 went to John Beddoes, MM D. on Jan 4 1866, No 266 to CaniWilkins esq., (died Nov 19 1852) on Dec 1 1831 and to the Institution on Nov 3 1853.

Charles Morgan; **Linen Merchant**. Share no 267; bought Feb 13 1818. Died Oct 15 1839. On Dec 6 1849 the share became the property of the Institution.

William Mortimer, surgeon. Share no 268, bought May 13 1823; W.M. died Dec 7 1851. On Nov 24 1853 share went to the Institution.

James Mounsher; **gentleman**. Share no 269. Bought April 8 1809 (E5) and May 11 1810. He died; no date.

Ralph Montague, jnr. Merchant. Share no 270; 271; 272; 273. For these £20 paid on April 8 1809 and £80 paid on April 30 1810. Montague died in 1824. No 270 went to William Rhodes Montague on Feb 9 1826. He died Jan 3 1827; then to William **Green, wine merchant on March 6** 1828; then to John Feargus Green on March 3 1836. Then on March 2 1871, to Edward Thomas Inskip. No 271 to William Rhodes Montague on Feb 9 1826; on his death, to Joseph Cookson, Merchant, March 6 1828; ib Aug 6 1829 to Josiah Wade, gentleman. He died June 27 1842. On Oct 6 1842 to Thomas Carlisle. Then on Jan 3 1856 to the Institution. No 272 to W.R.M. on Feb 9 1826. Died Jan 3 1827. Thus to Joseph Cookson, on March 6 1826; Joseph Cookson on March 6 1828. Then on June 7 1866, Institution.

Mrs. Hannah More; share no 274. On Aug 1 1839, Edward Elton, gentleman. The share itself was bought on April 3 1809.

Mrs Harriet Garland Muller; share no 275. Bought July 6 1821. Transferred on Feb 11 1830 to Richard Fry, chocolate maker.

James Ezekiel Nash; share no 276; April 7 1809. (E5) and March 29 1820. He died on Jan 2 1845.

John New, M.D. Share no 277. Bought May 6 1824 (N.T.) Share no 427 bought Dec 1831; (this must be inaccurate as it was transferred to Rev. Francis Thomas New on Jan 28 1830.)

John New, jnr. share no 278. Bought May 11 1824. (N.T.)

Edward Nicholls, share no 279. Bought in **stages** (April 7 1809); March 13 1810; May 21 1810. Transferred to Lt. General 'Robert Browne, April 24 1824; to Richard Tate Stoaate; May 1 1834. Then to William Salmon, surgeon on Jan 7 1836; then to John Bates gentleman on June 1 1837. He died July 2 1869. Thence to Mrs Susan Rodon Bates, Oct 7 1869.

John Norton; stationer. Share no 280. Bought March 11 1824. (N.T.)

Joseph Orlidge; wine merchant. No 281. Bought Jan 3 1823. Died March 29 1825. Transferred on Sept 6 1827 to Robert Guppy, sugar refiner. On Sept 2 1830 to Samuel Guyy, jnr. Then to Robert Guppy on Nov 6 1834,

David Day Orlidge; share no 282, Bought Jan 3 1823, Transferred on Feb 4 1836 to Rev, John Edward Bromby. On Nov 4 1847 to Christopher Lilly; on Dec 2 1847 to Thomas Hawkins.

William Oliver, gentleman. Shre no 283. Bought April 5 1809 (E51 and Feb 21 1818. Transferred on March 27 1824 to Lionel Oliver Bigg, solicitor.

Jeremiah Osborne, solicitor. Share no 284, and share no 285. Bought Dec 8 1818. He died Nov 26 1842. Transferred to Robert Osborne, solicitor on July 4 1850. Died June 1854. (Both shares transferred to this person).

Arthur Palmer, solicitor. Share no 286; no 287; bought Jan 3 1823 and April 3 1824. No 286 not transferred. No 287 transferred to George Cumberland; on Dec 1 1825. G.C. died Aug 8 1848. Thence to George Cumberland, jnr, March 7 1839. Thence to Major Thomas Austin, F.G.S.

James Perry, merchant. Share no 288. Bought Jan 4 1823. Transferred April 7 1831 to Thomas Eden Jones.

James Roquet Phillips; share no 289. Bought Jan 19 1818. He died Oct 24 1836. On May 4 1837, transferred to John Wreford, gentleman.

Robert Phippen; share no 290. Bought April 29 1823. He died July 5 1869.

Charles Peirce, solicitor, share no 291. Bought Jan 6 1820. Transferred on Feb 3 1825 to William Browne, Bookseller. On Feb 2 1843, it went to Rey, William James.

Charles Pinney, Esq., share no 292, bought Jan 2 1823. He died July 17 1867, Transferred on Dec 6 1867 to Frederick Wake Pinney.

Charles Pope, Esq., share no 293. Bought April 19 1809
{E51 and Aug 1 1822. Transferred on June 28 1832 to Daniel
 Baynton, Solicitor. Relinquished to the Institution on
Jan 3 1856.

Andrew Pope, Banker. Share no 294. Bought April 18 1809 and
 Jan 22 1818. Transferred on 3 Dec 1835 to George Lynch,
gentleman.

Rev. Joseph Porter; share no 295. Bought April 2 1824. Died
 Nov 2 1832. Transferred to Lachlan MacBayne on June 5 1834,
 and to Robert Lang, Iron Merchant on April 5 1849.

John Decimus Pountney; share no 296. Bought Feb 9 1822.
 (N. T.)

Thomas Hungerford Powell; share no 297. Bought Mar 3 1824.
He died Sept 17 1836. Thence to Timothy **Sampson Powell**,
gentleman, on April 2 1840.

John Price, Ironmonger. Share no 278. Bought March 31 1824.
 Price died Feb 2 1831. Transferred to Henry Cruger Price on
March 3 1836.

James Cowles Prichard, share no 299. Bought Feb 1 1823. Not
transferred. J.C.P. died on Dec 22 1848.

NeastGreyille Prideaux; share no 300, Bought Jan 4 1823
Transferred to John Llewelin, solicitor, **Dec 1 1836.**
 He died Aug 2 1853, Relinquished to the Institution on Jan
 3 1856,

Francis Greville Prideaux; share no 301. Bought Jan 28 1823. (N.T.1

Edward Protheroe, esq., share no 302, 303, 304, 305, Bought Dec 22 1817. No 302. No transfer. No 303 to Edward Protheroe, jnr. on June 7 1827. No 304 to William Hautenville on July 5 1827; thence to John Harford, Vice Chamberlain, on Dec 3 1829. No 305 to Pavis Thomas Dick, M.D. Thence to John Howell, M.D., on Jan 1 1829. Thence to the Institution on March 7 1844.

Benjamin Purnell; share no 306. Bought Dec 2 1822. Then transferred on March 5 1846 to Walter Crawfaird Bernard, merchant.

Revd. Francis Randolph, D.P. Prebendary. Share no 307. Bought July 26 1821. N.T. He died though, on 14 June 1831.

Thomas Ransford; share no 308. Bought April 29 1824. Transferred on May 3 1827 to Charles Joseph Whittuck; on Sept 2 1847 to Henry Brittan, solicitor. On March 7 1850 to Charles Grieg, surgeon.

Edward Jarret Ransford; share no 309. Bought March 27 1824. (N.T.) Died, March 2 1858.

Joseph Reynolds; share no 310. Merchant. On Jan 1 1846 to John Reynolds, gentleman. No 310 to John Reynolds, gent; on Nov 7 1847 to Joseph Reynolds; to the Institution on Sept 4 1862, Bought Feb 15 1820f 311, 312, 31.3. No 311 transferred to William Francis Morgan on Nov 4 1830; no

312 to Thomas Reynolds, Merchant, on April 1824; to Samuel Harford Lury **on Dec** 14 1837; then on Sept 7 1865 to Walter G. Fry, Tanner. No 313 to Joseph Gulson Reynolds on April 24 1824.

James Richards, gentleman, of Ilfracombe. Share no 314.

Bought on Mar 13 1810 and May 10 1810; transferred on Dept 18 1824 to Samuel Richards, gentleman. And then on Jan 7 1836 to Charles Spurrier.

John Rickards; share no 315. Bought March 31 1824. Died Dec 18 1836. Transferred on Dec 6 1838 to Charles Savery, gentleman. Then on Dec 1 1842 to Foskett Savery, solicitor. He died Dec 21 1863. Transferred again on Dec 1 1864 to John Naish Smart, solicitor **of Swansea**.

Jacob Wilcox Ricketts, Banker. Died 29 Aug 1839, having bought on April 30 1821. Share **transferred** to the Institution on Dec 4 1851.

Richard Ricketts, Tobacconist. Share no 319. Bought Sept 29 1820. **He died March** 31 1851. Share transferred to the Institution Sept 1 1853.

Henry Ricketts, Glass Maker. Share no 318. Bought Jan 16 1821. (N.T.)

Frederick Ricketts, Tobacconist. Share no 319, Bought Feb 19 1820. (N. T. Z

James Robe, merchant. Share no 320, Bought April 5 1810.

He also paid £5 to the **Museum** Fund, (N,T,I

Nicholas Roch, esq., Share no 321. Bought April 11 1809.

(E51 and Feb 14 1824 C£20}, Transferred to the Institution

Dec 6 1849.

Revd. John Rowe. Share no 322. Relinquished to the

Institution on April 5 1849. Bought May 9 1823.

Edward Sampson, solicitor. Share no 323; 324; bought April

20 1822. Died: August 9 1848. No 323 relinquished to the

Institution on April 7 1853. No 324 to Edward Sampson, jnr.

on Oct 5 1837.

Thomas Sanders; Corn Factor; share no 325. Bought March

and May 1810, having put £5 down in April 1809. Thomas

Sanders died on Aug 30 1854. Share transferred to Thomas

Pease, esq., of Henbury, on March 1 1860.

John Naish Sanders, gent., share no 326. Bought on March

25 1809 (E5); July 15 1809 (£5), and Feb 9 1810 (£10).

J.N.S. died Jan 20 1870. The share was transferred to Nov 3

1870 **and Edward Sanders.**

George Edie Sanders; share no 327. Bought April 29 1809

(E5); March 27 1810 and May 22 1810 (£10 each); he died

on April 2 1851. Share **transferred** to William Terrell,

merchant, on March 4 1852.

Thomas Richard Sanders; share no 328. Share no 328 bought

Feb 18 1820. (N.T.1

Henry Sanders, wine merchant, share no 329. Bought Feb 18

1820. (N.T.)

William Sanders; share no 330. Bought Feb 18 1820. (N.T.)

William Scott, merchant. Share no 331. Bought Feb 17 1824. Scott declared a Bankrupton Jan 8 1830. Share transferred to Henry Ridout Downman on Aug 5 1830. Thence to George Smith, jnr., copper merchant, on Sept 2 1830. He died on May 23 1832. Share transferred on June 6 1839 to Henry Prichard, jnr., oil merchant. And then on July 4 1839 to the Hon. Francis H.F. Berkeley, M.P.

Rev. Samuel Seyer. Share no 332. Bought April 13 1809. And March 5 1824. He then died in 1831. Share transferred to Thomas Bryant, gentleman, on April 5 1832. Then to Mrs Sarah Guppy, Sept 1 1836. Then on Dec 14 1837 to Charles Eyre Coote. Died Nov 22 1853.

George Penrose Seymour, esq., Shares no 33, 334. Bought April 8 1809 and May 17 1810. He died on July 16 1827. Both shares transferred to Louisa Seymour on Feb 12 1829. Then, no 333 to Revd. George Turner Seymour on 2 Feb 1854. No 334 to Joseph Seymour Metford on 2 Feb 1854. **J.S.M. was a surgeon.**

Henry Sheppard; share no 335. Transferred on Nov 3 1864 to John Henry Rogers, gentleman of Portland Square.

Richard Smith, Surgeon, share no 336, and 431. No 336 bought on Sept 8 1820. No 431 bought on Jan 4 1825. Richard Smith died on Jan 24 1843, No 336 went to Mrs Anna Eugenia Smith on Oct 5 1843, No 431 went to Col, William Clarke on Feb 1 18271 he died June 23 1839. Thence to Rev Robert Brodies A.M. on Feb 4 1841; relinquished to the Institution on Jan 5 1854.

Thomas Priske, gentleman. Share no 432.

Brooke smith; solicitor. Share no 327. Bought Jan 15 1818.

Henry Smith, Linen Merchant. Share no 338. Bought March 27 1824. Transferred to Nathan Windey on July 5 1827. He died Feb 19 1840. Then on July 2 1840, to James Fripp, M.D. on Feb 6 1845 to George Clements Harril, Auctioneer. On Aug 2 1849 to Henry Runley, Architect. On Dec 7 1854 to the Institution.

Mrs Ann Papwell Smith; share no 339. Bought Dec 21 1822,
(N. T.)

John Hugh Smyth, esq. (Inter John Hugh Smyth-Piggot, esq).
share no 340. Bought June 16 1821. (N.T.)

Admiral Thomas Sotherby; share no 341. Bought Jan 24 1824.
Transferred on Jan 22 1829 to William Sheppard, jnr.

Edward Stephens; Solicitor. Share no 342; bought April 1809 and May 1810 (£20) transferred on August 6 1829; to John Stephens; on July 3 1845 to William Mallard, Accountant; and on March 6 1856 to Charles Mallard, (Captain in R.N.)

John Edmonds Stock, M. D. **Shares no 342; 344;** bought March 30 1809; April 6 1810; and February **9 1822, No 342 no** transfer, No 344 on Jan 26 1826 to James Billings Badham; and on April **4 1844** to Gregory Oliver Lowe, gentleman.

Thomas Stock, sugar Refiner. \$share no 345; bought Oct 28 1823. He died April 27 1838. Share then transferred to Mrs Mary Ann Butterworth on Feb 2 1843.

William Stock, Miller. Share no 346, 347, 348, 349. Stock bought all these shares on Feb 28 1824. He died; date: April 7 1825. Transfers as follows: no 346 to Thomas Rankin on Sept 6 1827; he died on July 22 1849. No transfer after that. No 347 to Edward Baker; on Jan 3 1828; he went bankrupt in Feb 1831. No 348 to Robert Fletcher, Accountant on Jan 3 1828. Thence to the Institution, on July 5 1866. No 349 to Joseph Henry Butterworth; on Nov 1 1827. He died on Oct 26 1828. Thence, on Dec 2 1830, to John Ware.

John Charles Stuart; share no 350. Bought April 12 1809 and May 9 1810. Share then went to Daniel Fripp, Merchant, on May 6 1824. To Rev. Zacharias Henry Biddulph on Dec 31 1824; To Rev. Theophilus Biddulph on Feb 7 1833. He died Feb 15 1837. On March 1 1838 the share went to Thomas South, gentleman. Then on March 4 1841 to Edmund Gustavus Muller, Artist.

Young Sturge, Surveyor. Share no 351; bought Jan 10 1820. On March 2 1826, it went to John Waring, merchant. And on Feb 6 1834 to Henry Riley, M.D.

James Sutton, Merchant. Share no 352. Bought Feb 23 1818; he died June 8 1824; on Feb 10 1825 he went to William Cooke, Merchant. He died on Feb 16 1864, On April 2 1868 transferred to Frederick Granger, ur eon.

John Taylor, Printer; Share no 353. Bought July 19 1823. He died on April 11 1859. CN.T.1

John Thomas; **Prior Park. Share no 354 . Bought March 22 1810. (E15) and Jan 16 1821, He died March 2 1827, Transferred to John Sanderson Thomas on Oct 4 1827; transferred to the Institution on Feb 7 1856.**

Edward Thomas, Grocer. No 355. Bought Jan 16 1821. He died **Dec 28** 1853. Transferred on April 6 1854 to George Thomas, Wholesale Grocer.

Samuel Thomas: Grocer, no 356. Bought Feb 25 1824. (N.T.)

John Thomson, Merchant. Shares no 357, 358. Bought April 1809 (£10); and March and April 1810 (E20 each). He died. Transferred to the Institution on Feb 2 1843.

Robert Stearne Tighe, of Michelstown, Westmeath. Share no 359. Bought May 7 1823. Transferred on August 4 1831 to **James** Evan Baillie, **esq., M.P. for Bristol**. He died June 14 1863.

William Toye, esq., of Gibraltar. **Share no 360**. Bought April 15 1823. Transferred on April 10 1824 to Joseph Theophilus' Toye; then to Joseph Langley, jnr. on Sept 3 1835. Then on Aug 2 1838 to William Henry Langley. Then on March 3 1842 to Joseph Langley, Jnr; on Nov 6 1862 to William H.L. Walcott, gentleman, of Vyvyan Terrace. And on Aug 4 1864 to Frederick Vice Jacques, Solicitor.

Rev. Walter Trevillyan, share no 361, Bought Oct 28 1823. (N. T. Z

Thomas Tyndall, (Royal Forti; share no 362; bought May 3 1824; transferred on Dec 1 1831 to John Kerle Haberfield; **on Dec 2 1858 transferred** to the Institution.

Sir Richard Vaughan, Alderman. **Share no 363 and 364.** Bought April 12 1809 (£20); May 22 1810. **365 and 366;** (£0) and Jan 23 **1818** (£0). No 363 to George Downing Fripp on April 2 1829; thence to Lepold **de Soyres** on Sept **6 1849. No 364 to Miss Susanna Forster** on April 10 1824; **to Miss Maria** Vaughan Clayfield on July 7 1826; then to John Gray, esq., on May 7 1829. No 365 to Philip Protheroe__on .April.,1Qi.824. No 366 to Philip Protheroe on April 10 1824; thence to Henry Addams Mayers on Feb 2 1832; to John Grant Wilson, Surgeon, on Oct 6 1836. Then to John Grant Wilson, M.P. on March 7 1861.

Charles Vaughan, Merchant. Share no 367. Bought June 23 1818. Transferred on May 4 1832 to Hugh Vaughan.

Philip Vaughan; Merchant. Share no 368. Bought July 10 1821. He died April 14 1864. Share then transferred to Philip Henry Vaughan, gentleman of Redland on Oct 6 1864.

Thomas Cooper Vanderhorst; share no 369. Bought Aug 31 1821; died Feb 13 1849. (N.T.)

Robert Willis Vizer, Merchant. Share no 370; no 466. Bought Jan 16 1821 and Feb 5 1825. No 370 no transfer. No 466 transferred to Charles Henry Vizer on May 3 1827 **(he was a merchant)** .

yilliam Killtgrew Wait; share no 371; bought May 30 1824. Transferred to Willian) Wright, merchant, on Mary 6 1828. Then on Aug 7 1856 to William Wright, vine Merchant and on of the aforementioned.

Richard Brickdale Ward; share no 372; 373. Nos 372 and 373 bought Jan 31 1810 (£102 and Dec 8 1817 (£401, 372 went to Francis Ridout Ward, gentleman on Nov 2 1854; 373 went to Charles Edward Ward, gentleman on Nov 2 1854,

Revd. Charles Richard Ward; **share no 374** . Bought March 16 1824. (N.T.)

Danvers Hill Ward; share no 375. Bought March 10 1824. (N.T.)

John Warne, **share no 376**. Bought April 5 1828. Then on Jan 3 1833 to John **Warne. He died** Oct 14 1837.

William Watson; Wine merchant. Share no 377. Bought March 5 1824. Then on Dec 1 1870, went to William Scott Watson and Rev. Henry Watson, M.A.

William Weare, Esq., Share nos 378, 379, 380, 381, bought on Nov 27 1817. 378 transferred to William Jerdone Braikenridge on Feb 5 1857. 379 to Josiah Morris Wilkey on Jan 26 1826. 380 to Thomas Miller Richards on Oct 1 1829; on Feb 2 1837 to William B. Curtis, Surgeon, Dentist. On April 6 1865 to Thomas Glass, Hat Manufacturer. 381 to Richard Honnywill on Jan 24 1828. He died May 30 1842. Transferred to Institution on Jan 7 1856.

Henry Weare; share no 382 transferred on May 7 1829 to Thomas Skyrme Protheroe, Share no 383 on July 7 to Henry Andrewes Palmer.

Thomas Weae; **share no 384**; bought April 10 1824. **Transferred**

on April 3 1834 to Miss Elizabeth Were, T.W. Having died
on Nov 4 1833.

James Joseph Whitchurch; share no 385 and 448; bought Sept
1 1820 and Jan 14 1825. No 385 (N.T.) and 448 to George
Powell on Feb 3 1825.

James Wigan; share no 386. Bought April 14 1824. Transferred
on Jan 6 1831 to Robert Tyson; on Feb 8 1831 to Thomas
Tyson; on May 2 1833 to George Weare Braikenridge; and on
July 3 1856 to Rev. G.W. Braikenridge.

William Williams; share no 387. Williams worked at the
Custon House; died Jan 19 1827. Transferred to Elizabeth
Williams on Dec 6 1827; she died on Nov 1848. Transferred
to Thomas P. Jose, Merchant.

Rev. John Law Willis; share no 388; bought Mar 26 1824.
(N.T.)

Samuel Reynolds Wilmot; share no 389; April 7 1809 (E5)
May 9 1810. Went Bankrupt on March 12 1835; then on Oct 1
1835 it went to Charles Manby, Engineer. On Dec 1 1836,
to James Cunningham, Merchant of Ring's Parade. And on
Feb 6 1845 to James Cunningham, Jnr.

Henry Overton 'Tills; Tobacconist. Share no 390. Bought
April 21 1809; (£51 and March and May 1810 (£101. Each
died on Dec 1 1826. On Sept 6 1827 the share went to
Frederick Wills, On Nov 4 1846, to Richard \$ipson,
Gentleman. Died June 9 1863,

John Winwood; Iron Founder. **Share** no 391. Bought April 15 1809. (£52 and Jan 2 1818 (£201,

Edward Winwood, Solicitor. **Share no 392.** Bought Feb 14 1818. Deceased. Dec 18 1824; transferred to Henry Quintyne Winwood. He died July 20 1835.

Admiral Thomas Wolley; no 393 bought Sept 20 1821. Died Aug 7 1826. (N.T.)

George Worrall, Esq. , No 394 bought March 10 1824. Died May 6 1840.

Samuel Worrall, gentleman. No 395 bought March 17 1824.

Philip John Worsley; **share no 396, and 397.** Bought April 8 1809 (E10) March 23 1810 (E 20) and May 12 1810 (E20).

Transfers: no 396 to Philip Worsley on May 22 1824 and Samuel Worsley on Feb 1 1827. No 397 to Samuel Worsley.

Matthew Wright. **Share no 398.** Bought March 4 1820. Transferred on Dec 2 1842 to Mrs Sarah Waring; and on Nov 4 1847 to Thomas Markland, gentleman.

John Yerbury, Banker. Shareno 399, 400; on April 21 1809 (£10) and May 19 1810 (E 40) Died June 26 1843. (No transfer after that). (At this point the alphabetical index breaks downs and random names come up. There may therefore be some overlap wLth the list as Xt stands up to herel,

George Thomas Grocer, **Share no 401;** purchased June 22 1824 (N. T. I

Richard Welford, Solicitor ("Marlbro"l; share no 402.

Bought Oct 2 1824. Transferred to Charles Joseph Fox,
M.D. Sept 2 1830.

Rev. Charles Ward; Precentor. Share no 403. Bought Oct 5
1824; transferred on April 4 1833 to Rev. John Swete, D.D;
and on Sept 4 1851 to Edward H.W. Swete, Surgeon.

Charles Payne, Merchant. Share no 404; bought Oct 8 1824.
Transferred on May 6 1847 to John Mercer, Jnr., gentleman.
On Dec 4 1855 it went to James Budgett, Merchant.

Francis Kentucky Barnes; no 405; bought Oct 8 1824.
Transferred on Jan 3 1856 to Preston Edgar, Gentleman.
On July 1 1858, to Francis Kentucky Barnes, Merchant.

Thomas Ormerod, Draper. No 406. Bought Oct 26 1824. (N.T.)

James Rocke, Distiller. No 407. Bought Oct 27 1824. He died
April 1 1827. (N.T.)

Henry Glascodine; No 408. Bought Nov 9 1824. Transferred
to the Institution Aug 4 1853.

Henry Locock, M.D. no 409. Bought Nov 16 1824. To the
Institution on Feb 2 1843.

William Underwood, jnr. no 410. Bought Nov 9 1824. To Joseph
Brazebrook on June 6 1833; and on Aug 5 1852 to John
Hopton Wyld, Distiller.

John Hewson; No 411 bought Nov 19 1824, Transferred to
Thomas Poole, March 6 1834, To the Reyd Henry Street of
Clifton on Aug 4 1836, On Aug 4 1842 to Thomas Kerslake,
Bookseller. On July 3 1845 to Christopher Edmond Broome, Esq.,

on May 1 1851 to David William Nash, Barrister. Then on June 4 1857 to the Institution.

Reginald Henry Bean; no 412, bought Nov 19 1824. (N.T.)

Richard Hunt, Iron Merchant, Share no 413. (See under Hunt).

John Fothergill, Iron Merchant. Share no 414. Bought Nov 27 1824. (N.T.)

Richard Nott, Iron Merchant. Share no 415. Bought Dec 8 1824. Bankrupt June 20 1834.

John Paine Berjew, M.D. No 416. Bought Mar 13 1810. (£10) and Dec 1824. Died Nov 16 1833.

John Nicholls Cossham; share no 417. Bought Dec 11 1824.

Transferred on Feb 4 1847 to Jacob M. Alman, Gent. Then on June 1 1848, to Charles Vining, Gent. He died Nov 26 1848.

Transferred on Sept 1 1853 to William Fripp, jnr, gentleman.

Mrs Mary Moresby; share no 418. Bought Dec 17 1824. (N.T.)

Oliver Ransford; share no 419. Bought Dec 17 1824. (N.T.)

George Booth; Broker. Share no 420. Bought Dec 17 1824.

Transferred to Edward Case, Merchant, who died on May 3, 1844 and then, on Dec 4 1845 to Edward Howe Case, Merchant.

Richard Llewellyn, jnr. Share no 421; relinquished to the institution.

William Dawson; Merchant. Share no 422; died 21 March 1825; Bought on Dec 23 1824, Thence, to Frederick Maxwell Dawson on Oct 4 1832; to Edwin Grant, Gentleman on July 3 1834.

He died on Aug 16 1836. Thence to Christopher **James Thomas**,
Soap Merchant, on Oct 4 18389

James Ireland Wright; share no 423, Bought Dec 28 1824.

He died 26 Feb 1842. (N.T.)

Thomas Wilkinson Ratcliffe; share no 424; bought Dec 30
 1824; transferred to **Walter Kyte Coles**, Gent. on May 26
 1834; thence to **Walter W. Roughsedge**, Soda Water Manufacturer.

On Jan 4 1844, to Richard G.S. Tuckett. Then on Sept 7 1854,
 to William Bird Herapath, M.D. W.B.H. died Oct 12 1868.

Richard Nott, jnr. Bankrupt. June 20 1834.

Richard Powell, Surgeon, Bought Dec 30 1824, (N.T.)

John New, M.D. Share no 427. Transferred on Jan 28 1830
 to Revd. Francis Thomas New.

Thomas Daniel, Esq., Alderman. (See Daniel).

Richard Oakley, Esq., Nos 429 and 430 bought Jan 8 1825.

Died 16 Nov 1832. (N.T.)

Richard Smith, Surgeon. No 431. (See Smith).

Thomas Priske, bought Jan 4 1825. Priske, a gentleman,
 died Feb 9 1839. Transferred to David Jenkins, Jnr,
gentleman.

Adam Holden; Sugar Refiner, No 433 bought June 5 1825,
 (N. T.1

Henry Francis Brooke, No 434. Bought Jan 5 1825. He died 3
 June 1831, (N,T.1

James Narraway Franklyn; (,See Franklyn).

Edward Phillips, Esq., (1829 a bankrupt); bought on Jan 5 1825. **Transferred** to Revd. **James Shackleton** on **Aug 6 1829**. **He died May 4 1842**.

Joseph Storrs Fry; share no 438. Bought on Jan 5 1825. Transferred to Joseph Fry on Oct 6 1825.

Revd. William Hale, no 440. Bought Jan 7 1825. Transferred on Sept 16 1841 to Emanuel Wait; he died Nov 28 1855.

William Lenton Clarke, no 444.

Revd. David Davies; D.D. Share no 446. Bought Jan 12 1825. He died Nov 5 1831. Transferred to Andrew Grant, Jan 6 1834; to John Henry Cutting, **M.D., on June 1 1837**; to William Trotman, M.D., on March 4 1941.

George Anthony Goddard; no 449. Bought Jan 14 1825; **thence on Feb 7 1839 to John O'Bryen M.D., on Jan 7 1858** to Revd. Frederick Neve of Bishop's House, Clifton. Then on April 7 **1864 to Lewis Fry, Solicitor**.

Francis Newbury, jnr. Share no 450, Jan 15 1825; to Isaac Leonard, jnr. on May 4 1826.

Samuel Simon Wayte; share no 451; Jan 18 1825. (N.T.)

William Winscombe; share no 453. Nov 1824/Jan 1825. Bankrupt **on May 22 1827. (N,T,Z**

David Miller, Druggist, share no 455, Bought Jan 25 1825. Thence to Robert Rankin? B,C,L, (sierra Leona?1; this on Feb 8 1831; on Nov 7 1833 to Captain Henry Prescott, R.N.; **on Dec 4 1834** to John Williams, **M.D; on Dec 3 1835** to

William Strong, Bookseller. He died June 28 1846; then on July 6 1848 to James Ford, King's St. Hull.

Henry Brooke, Esq., Alderman. No 456 bought Jan 25 1825.
(N. T.)

William Orchard Gwyer, share no 458; bought Jan 28 1825.
(N. T.)

John Stuckley Lean; bought Jan 25 1825. No 459 transferred to Institution on May 4 1859.

Miss Elisabeth Jones (d. Dec 5 1827). No 460 bought Jan 31 1825. Transferred on Feb 5 1829 to Martha Bonbonous; on Feb 6 1834 to Richard Tate Stoate; on April 3 1834 to Andrew Thompson (d. May 28 1837); on Jan 5 1837 to John Welsford Cowell. Then to the Institution on Feb 6 1851.

Thomas Hassell; no 461, bought Feb 1 1825. (d. June 18 1829). Transferred to Revd. Francis Edgeworth, May 5 1831. Thence to the Institution Feb 4 1858.

John Locke Panter, no 463, bought Feb 2 1825. (d. Oct 25 1840). Transferred to George Rock Woodward on Mar 6 1845.

John Dove, no 464. Bought Feb 4 1825. Transferred on June 2 1842 to Richard Shackleton Pope, Architect. Then on June 2 1857 to Thomas Shackleton Pope, Architect.

Vincent Stuckey, no 465, Bought Feb 1 1825, Died May 8 1845, Transferred to the Institution on June 5 1851,

rsrael James Hudson. No 485. Bought Mar 12 1825. Thence on

June 1 1826 to James Graves Russell; on Aug 3 1837 to JosephBell Clarke, gent. of Arno's Court. On June 3 1841 to Revd Thomas Haynes. On April 1 1852 to the Rt Worshipful N.H.G. Langton, Mayor of Bristol.

William Powell; share no 487. Bought Mar 15 1825. On Aug 2 1827 to Thomas Powell.

Philip Debell Tuckett; share no 488. Bought Mar 19 1825; transferred Jan 6 1831 to Francis Tuckett. On April 5 1855 to Francis Fox Tuckett.

Thomas Carlisle; No 489 and 490. Bought May 24 1825. No 489 went on Feb 1 1827 to William Wolfe Alexander. No 490 went on Feb 1 1827 to Joseph Frankel Alexander; died Nov 23 1848.

Charles Martin; (Customs **House**) no 491 bought July 13 1825. (N. T.)

James Adam Gordon; shares no 492 and 493. Bought Sept 13 1825. (N.T.)

Thomas Wintle, Linen Draper No 495. Bought Nov 15 1825. Transferred on June 5 1849 to Charles Taylor, Gentleman.

Isaac Howell, no 496. Howell **was a** glass merchant. Bought between Nov 20 1824 and Jan 1826. On April 6 1826, it went to Richard Powell, Surgeon.

Francis Fray, no 497. Addressed ap "Frenchay^o urea of Bristoll. Bought Feb 2 1826, Qd,T.1

Thomas Perington, no 498. Bought May 15 1826. CN.T,I.

George Cooke; Solicitor. No 499. Bought Jan 10 1827. (N.T.)

Coddell Holder, no 500. Address: Trinity College, Oxford.
Bought Jan 2 1827. **Transferred on Dec 1 1836** to William
Claxton, Merchant.

Rt. Hon. Lord Lyndhurst, Lord High Chancellor, Recorder
of Bristol; etc. no 501; bought May 31 1827, Died Oct
12 1863. (N.T.).

Rt. Rev. Robert Gray; Lord Bishop of Bristol. No 502. Bought
Aug 3 1827. He died Sept 28 1834. Share transferred on Mar
2 1837 to the Rt. Rev. **James Henry** Monk, Lord Bishop of
Gloucester and Bristol.

APPENDIX 3

LIST OF THE HONORARY MEMBERS OF THE PHILOSOPHICAL AND
LITERARY SOCIETY elected from the Establishment of the
Society to the end of the Year 1861.

Elected

1823 **Davy, Sir Humphry, Bart., F.R.S., etc., etc.**
 Southey, Robert, Esq., LL.D., Poet Laureate.
 Coleridge, S.T. Esq.
 Lawrence, Sir Thomas, Pres. R. Academy.
 Gaily, Edward Hodges, Esq., R.A., London.
 Kater, Capt. Henry, F.R.S.
 Webb, John, Esq., Leghorn.
 Dallaway, Rev. James
 Daubeny, Charles, - B., Esq., M.D., F.R.S., R.G.S.,
 etc., Prof. of Chemistry in the University of
 Oxford.
 Buckland, Very Rev. Wm., D.D., F. F.. S., etc., Prof.'
 of Geology in the University of Oxford.
 Sedgwick, **Rev. Adam, LL.D., F.R.S., F.G.S., Prof.**
 of Geology in the University of Cambridge.
 Henslow, Rev. John Stevens, F.L.S., F.G.S.
 Jameson, Robert, **Esq., F.R.S.E., F.L.S., F.G.S.**
 Conybeare, Rev, J.J., F.R.S., F.G.S.
 Traill, Thomas Stewart, M.D., F.R.S., Edinburgh.
 Faraday, Michael, D.C.L., F.R.S., London.
 Dillwyn, L.W., **Esq., F.R.S., F.L.S.**

Meade, Thomas, Esc., F.G.S.

Skinner, Rev. John, **M.A., F.R.S., F.A.S.**

Richardson, Rev. Benjamin, F.G.S.

Greenough, **G.B., Esq., F.R.S., F.L.S., F.G.S.**

Parry, Capt. Sir Wm. **Edward, R.N., F.R.S.**

Lysons, Rev. Daniel, Rodmarton.

Fosbroke, Rev. D.T.

Cooke, Rev. - , D.D., R.G.S., Tortworth.

Roscoe, William, Esq., Liverpool.

Heywood, Sir Benjamin Arthur, Bart., Liverpool.

Dalton, John, D.C.L., F.R.S., Manchester.

Harcourt, Rev. Wm. V. Vernon, F.R.S., F.G.S., Weldrake,
near York.

Weaver, Thomas, Esq., F.G.S., Killarney.

Halifax, Rev. Robert, F.G.S., Standish.

Cockerell, C.R. Esq., London.

Hawker, John, F.G.S., Dudbridge.

Hawker, George, Esq., Stroud.

Swayne, Rev. George, M.A., Dyrham, near Bath.

Knapp, J.L., Esq., F.L.S., Olveston.

Parkinson, James, Esq., F.G.S., Author of 'Organic
Remains'.

Scoreby, Rev., W., D.D., F.R.S.E., F.L.S.

- 1824 Turner, Rev., Wm., **Newcastle.**
- Waterton, Charles, Esq., Walton Hall, Wakefield.
- Peall, Thomas, Esq., M.R.L.A.,** Dublin.
- Corrie, Rev. John, F.R.S., Birmingham.
- Bright, Richard, **M.D., F.R.S., F.G.S.**
- Franklyn, Capt. Sir John, R.N.
- Smith, William, LL.D., Author of 'Map of Strata of
England and **Wales**'.
- Giesecke, Sir C.L., M.R.I.**E., F.R.S.E.,** Dyblin.
- Atkinson, John. Esq., F.L.S., Leeds.
- Bewick, Thomas, Esq., Newcastle.
- Davy, Edmund, Esq., R.F.S., Dublin.
- La Trobe, Rev. Christopher Ignatius.
- Wallich, Nathaniel, M.D., Ph.D., F.R.S., Calcutta.
- Dick, Paris, M.D., Calcutta.
- Blissett, Joseph, Esq., The Hay.
- Duncan, John Shute, Esq., M.A., Oxford.
- Gilbert, Davies, **Esq., Pres. R.S.**
- Sabine, Edward, Major General, R.A., D.C.L., F.R.S.,
etc.
- Birkbeck, George, M.D., F.G.S., F.A.S.
- Sabine, Joseph, Esq., F.R.S., F.L.S., etc., London.
- Price, Richard, Esq., Rust,
- Pictet, Professor, Geneva.
- Rowland, W. WatkIns, Esq,, Surgeon of the Recla.
- Hoare, Sir Richard Colt, Dart.,, F.A.S.
- Grottanelli, Stanislaus, Professor, Sienna.

Crichton, **Sir Alexander, M.D., F.R.S., F.L.S.**

Broderip, Wm. L., **Esq., F.R.S., F.G.S., etc.,**
Wallington.

Clift, **William, Esq., F.R.S., F.G.S., London.**

1825 **Lyon, G.F., Captain, R.N.**

Bathurst, Right Honourable Earl.

Trevelyan, Sir Walter C., Bart., M.A., F.G.S., etc.
Wallington.

Watt., James, Esq., Aston Hall.

Phillips, William, Author of 'Mineralogy'.

Phillips, Richard, **Esq., F.R.S., etc., London.**

Colby, Thomas, Colonel, **R.E., LL.D., F.R.S.**

Nicholl, Right Hon. Sir John, **D.C.L., F.R.S.**

Groombridge, Stephen, Esq., F.R.S.

Freeling, Sir Francis, **Bart.**

Smith, Sir James Edward, M.D., F.R.S.

Say, Thomas, **Esq., Professor, Philadelphia.**

Fitton, Wm. Henry, **M.D., F.R.S., F.G.S.**

1826 Duncan, Philip Bury, **Esq., M.A., Oxford.**

Fleming, Rev. J., D.D., F.R.S.E., Cupar.

Mitford, Robert, Captain, **R.N., Kelso, Scotland.**

Selby, Prideaux John, **Esq., F.L.S., F.R.S.E., Twizell**
House, Alnwick,

Elton, Sir Charles Abraham, **Bart., Cleydon Court.**

Marshmap, Rev. Joshua, LL.D., Serampore.

- 1827 **Woods, Henry, Escl., London,**
Bedford, His Grace the Duke of, Woburn Abbey.
Hilhouse, William, Esq., Demerara.
 Bosworth, Rev. Joseph, M.A., F.S.A., F.R.S.L., Water
 Stratford, Bucks.
- 1828 Addams, Robert, Esq., Hammersmith, London.
De La Beche, Sir Henry Thomas, C.B., F.R.S., F.G.S.,
 etc.
 Lincoln, The Right Rev. John, Lord Bishop of.
 Macbridge, John David, Esq., D.C.L., F.R.S., etc.,
 Oxford.
Norton, Andrew, Professor, Cambridge University,
 United States.
 Silliman, Benjamin, M.D., Professor Yale College,
 United States.
 Blumenbach, Professor, University of Gottingen.
 Bath and Wells, the Right Rev. the Lord Bishop of.
 Crabbe, Rev. George.
 Webster, Thomas, Esq., F.G.S., etc.
- 1829 **Biber, Rev. George Edward, D.D.**
 Riddle, Rev. Joseph Esmond, M.A., Lackington.
 Williams, Rev. David, F.G.S., Bleadon.
 Mc Enery, Rev. John, Torquay,
 Dupaytrin, **Mons, Le Baron,** Paris,
 Britton, John, **Esq., F.S.A.,** London,
Lonsdale, William, Esq., F.G.S.

- 1830 Gregory 015.nthus, LL.D., F. **R.S.**, **etc.**, Woolwich,
Cuvier, **Mons. Le Baron**, **Paris**.
- 1831 Davies, Rev. Edward, Author of 'Celtic Researches'.
De Freycinet, Louis, Captain French Navy.
Griscom, John, Professor Natural Philosophy, New York.
Booker, Rev. Luke, LL.D., F.S.A., etc.
- 1832 Brinckley, the Right Rev. Dr.
Spineto, the Marquis, Cambridge.
Buddle, John, Esq., Newcastle.
- 1833 Herapath, John, Esq., Kensington.
Hunter, Rev. Joseph, Bath.
- 1834 Somerville, Mrs.
Brunel, Sir **Marc Isambard**, F.R.S., Westminster.
Chantrey, Sir Francis.
Williams, Taliesin, Esq., Merthyr Tidfil.
Jones, **Rev.** John, D.D., Oxford.
- 1835 Pugh, W. Owen, Esq., D.C.L., Egryn, near Benbigh.
Agassiz, Louis, M.D., Professor, Cambridge,
Massachusetts.
Jordan Swinfin, Esq., Rio Janeiro.
Roget. Peter Mark, M.D., Sec. R.S., F.G.S., etc.
London.
Airy, G.B., D.C.L., F.R,5,, Astronomer Royal.
Brewster, Sir David, D.C.L., LL.D., K.H., F.R.S.L.,
etc.

Peacock, Very Rev. George, DID., Dean of Ely,
F.R.S., etc,

Babbage, Charles, Esq., M.A., F.R.S., Cambridge.

Brisbane, Gen. Sir Thomas M., Bart., K.C.B., D.C.L.,
F.R.S., etc.

Lardner, Rev. Dionysius, LL.D., etc.

Taylor, John, Esq., F.R.S., etc., London.

Powell, Rev. **Baden, M.A., F.R.S., Oxford.**

Graves, Rev. Charles, M.A., Professor, Dublin.

Du Ponceau, Esq., President of American Phil.Soc.

Hamilton, Sir Wm. R., LL.D., F.R.A.S., etc., Dublin.

Murchison, Sir Roderick Impey, D.C.L., F.R.S.,
F.G.S., etc., London.

Lyell, Sir Charles, M.A., LL.D., F.R.S., F.G.S.,
London.

Whewell, Rev. Wm., D.D., F.R.S., etc., Cambridge.

1836 Greg, Wm. Rathbone, Esq., Manchester.

Murphy, Rev. Robert, M.A., Cambridge.

Hartnell, Marc Antony, Esq., M.A., Seaton.

Stutchbury, Henry Rome, Esq., London.

Robinson, Rev. Thomas, R., D.D., Armagh.

Barlow, Peter, Esq., Professor, Woolwich.

1837 Phillips, John, **Esq., M.A., LL.D., F.R.S., etc.,**
Professor of Geology, Oxford,

Crosse, Andrew, Esq., Broon4field, Somerset.

Phelps, Rev. William, Mere, Somerset.

Rankin, Robert, Esq., Chief Justice, Sierra Leone.

\$chomburgh, Sir Robert **Hermann, Demerara.**

X'elloly, John, M.D., 'R. \$., Woodton Hall, Norfolk.

Beete, Captain John Picton, 21st Fusiliers.

1839 **Pratt, Samuel Peace, Esq., F.R.S., F.G.S., Bath.**

**Conybeare, Very Rev. William Daniel, D.D., F.R.S.,
F.G.S., etc.**

1841 Cutting, John Henry, **Esq., M.D., Barbadoes.**

1845 Carpenter, Wm. Benjamin, Esq., M.D., F.R.S., F.L.S.,
F.G.S., London.

1846 Prichard, James Cowles, Esq., M.D., F.R.S., etc.

1850 Thwaites, George Henry K., Esq., F.L.S., Ceylon.

Stutchbury, Samuel, Esq., F.G.S.

Dalton, Edward, Esq., D.C.L., F.S.A., Cainscross,
near Stroud.

1852 Forbes, James David, LL.D., F.R.S., Prin. Univ. St.
Andrews-.

LIST OF ASSOCIATES

Elected from the Establishment of the Society to the
close of the Year 1861

Elected

- 1823 Oakley, Rev. William, D.D.
 Rootsey, Samuel.
 Exley, **Thomas, A.M.**
 Washbourne, George.
 Ripplingille, Edward V.
- 1824 Edgar, John Foy.
 Capper, Lieut., R.N.
- 1825 Rotch, **Benjamin, Esq.,**
- 1826 Hall, Rev. Robert, M.A.
- 1827 Herapath, William, Esq., resigned.
- 1828** Foster, Rev. **James**, Stapleton.
- 1831 Cottle, Joseph, Esq.
- 1832 Stutchbury, Samuel, A.L.S., Curator **of Museum.**
- 1833 West, William, Clifton Observatory.
 Bunt, Thomas G.
 Jones, Edward.
- 1843** Austin, Thomas, Jr,;
- 1847 Browne, William Elliott,
- 1852 **King, Thomas D.**

Etheridge, Robert, Curator of **Museum**.

1861 **Barton, Stephen.**

Owen, Hugh.

Leipner, Adolphe, Assistant Curator.

Manuscript SourcesBristol Corporation Archives Office

Records relating to the Bristol Institution , registration number 32079 , items 1 - 152 , (includes minute books , registration of proprietors , letter books , cash books and correspondence) .

Richard Smith Biographical Memoirs .

Records relating to the Bristol Infirmary , especially the annual state of the Infirmary reports , no. 35893 .

The Collection of John King Letters and **Miscellanea** , registration number 32688 .

The Catcott **Bequest** , registration number P/T/FA12 .

Bristol Central Library Reference Library

The Jefferies Collection especially vols. 1 & 2 , numbers B26065 and 26066 ; B7965 and 7966 .

Miscellaneous items , including printed annual reports , numbers B4508 - 4521 , and materials on the Bristol Statistical Society , B4592 .

The Catcott Collection including his unpublished writings , correspondence and papers . The papers are numbered 149.3H 1154 .

The Cornwall County Record Office Truro.

The Davies Gilbert Archive, MS/DG43.

Materials on the Penzance Dispensary, accession
number 1848; DDX.439.

Manchester College Oxford

The Lant Carpenter papers

Royal Institution Library London

Humphry Davy manuscripts, boxes 22 to 26

Bibliography

PRIMARY SOURCES :

This is not a complete bibliography of all the primary sources named in the thesis, since the appendix which lists papers given to the Philosophical and Literary Society makes up another guide to primary sources.

Agassiz, L., Recherches sur les poissons fossiles,
Neuchatel, 1833-43.

Bakewell R., An Introduction to Geology, London, 1813.

Barlow, E., An essay on the medicinal efficacy and
employment or the Bath waters, Bath, 1822.

Baylies, W., A narrative of facts, demonstrating the
actual existence and true cause of that physical
confederacy in Bath, London, 1757, London, 1757.

Baylies, W., The use and abuse of Bath waters, London,
1757.

Bright, R., 'On the strata in the neighbourhood of
Bristol', with notes extracted from the communications
of George Cumberland, esq., Trans. Geol. Soc. London,
1817, 4, 193-205.

Buckland, W., Reliquiae Diluvianae; or, Observations on the
Organic Remains Contained in Caves, Fissures, and
Diluvial Gravel, and on other Geological Phenomena,
Attesting the Action of an Universal Deluge, London,
1823; 1824.

Buckland, W., Geology and Mineralogy Considered with
Reference to Natural Theology, London, 1836.

Beddoes, T., 'Observations on the affinity between
basaltes and granite', Phil. Trans., 1791, 81,
48-70. 1

Beddoes, T., (ed): Contributions to Physical and medical
knowledge, principally from the West of England,
Bristol, 1799.

Beddoes, T., Rules of the Medical Institution for the
benefit of the sick and drooping poor, Bristol, 1803.

Beddoes, T., A letter to the Rt. Hon. Joseph Banks,
F.R.S., London, 1808.

Beddingfield, James, A compendium of medical practice
illustrated by interesting and instructive cases,
London and Bristol, 1816.

Beeke, H., A Letter on the Means of securing a safe and
honourable peace, Bristol, 1798.

Blainville, H.M. de, Manuel d'actinologie et de
zoophytologie, 2 vols; Paris, 1834.

Buckland, W. and Conybeare, W.D., 'Observations on the
South-Western Coal District of England', Trans. Geol.
Soc., 1824, 1, 210-316.

Carpenter, Lant, LL.D., An introduction to the geography of
the New Testament, third edition, London, 1811.

Carpenter, Lant, LL.D., A comparative view of the
scriptural evidence for Unitarianism and Trinitarianism,
London, 1817.

Carpenter, R.L., Memoirs of the Life of Reverend Lant
Carpenter, Bristol and London, 1842.

Carpenter, W.B., 'Physiology as an inductive science',
British and Foreign Medical Review, 1838, 5, 317-342.

- Carrick, A., A dissertation on the chemical and medical properties of the Bristol Hotwell water, Bristol, 1797.
- Carrick, A., Address on the opening of Bristol College, 17 Jan 1831, Bristol, 1831.
- Carrick, A. and Symonds, J.A., 'Medical topography of Bristol', Transactions of the Provincial Medical and Surgical Association, 1834, 2, 148-80.
- Catcott, A., A Treatise on the Deluge, 2nd edn., London, 1768.
- Chisholm, Colin, M.D. F.R.S., Essays on the malignant pestilential fever of 1793, Bristol, 1795.
- Clark, G.T. (ed), The West of England Journal of Science and Literature, Bristol, 1835-6.
- Cleland, A., Appeal to the publick or a plain narrative of facts relating to the proceedings of a party of the governors of the new General Hospital at Bath against A. Cleland, London, 1743.
- Coleridge, S.T. The Watchman (ed. L. Patton), London, 1970.
- Conybeare, W.D., 'Additional **Notices** on the **Fossil Genera** Ichthyosaurus and Plesiosaurus', Trans. Geol. Soc., **1824**, 1, 103-23.
- Conybeare, W.D., 'Letter on Mr. Lyell's "Principles of Geology"', Phil. Mag. & Ann. Phil., 1830, 8, , 215-19.
- Conybeare, W.D., Inaugural Address on the Application of Classical and Scientific Education to Theology; and on the Evidences of Natural and Revealed Religion, London, 1831.

Conybeare, W.D., 'Report on the Progress, Actual State, and Ulterior Prospects of Geological Science', Report of BAAS, for 1831. 1832. London, 1833, 365-414.

Conybeare, **W.D. and De La Beche, H.T.**, 'Notice of the Discovery of a New Fossil Animal, Forming a Link between the Ichthyosaurus and Crocodile, together with general Remarks on the Osteology of the Ichthyosaurus " , Trans. Geol. Soc. , 1821, 5, 559-94.

Conybeare, W.D. and Phillips W., Outlines of the Geology of England and Wales , London, 1822.

Conybeare, W.D. 'J.S. Miller,' in The Philosophical Magazine or Annals of Philosophy , January 1831, pp 3-7; and a notice on Miller by 'H J.', Bath and Bristol Magazine , 1832-4.

Cox, Joseph Mason, Practical observations on insanity , London, 1804.

Cumberland, George, Thoughts on outline, sculpture and the system that guided the ancient artists in composing their figures and groups, with twenty-four designs of classical subjects on the principles recommended in the essays , London, 1796.

Cumberland, George., 'On the limestone beds of the river Avon, near Bristol, with a description of the Magnesian **beds** that **repose on their basset edges**', Trans. Geol. Soc. London , 1821, 5, 95-113.

Cumberland, George., 'Descriptions of some new fossil encrini and pentacrini, lately discovered in the neighbourhood of Bristol', Trans. Geol. Soc. of London , 1821, 5 87-94.

- Cumberland, George, Reliquiae Conservatae, from the primitive materials of our present globe, Bristol, 1826.
- Daubeny, Charles, Reasons for supporting the Society for Promoting Christian Knowledge, London, 1812.
- Daubeny, C.G.B., 'Apology for British Science', London Literary Gazette, 1833, 769-71, 789-92.
- Dickson, D.H., Observations on the prevalence of fever, Bristol, 1819.
- Duncan, J.S., Botany-Theology, an Arranged Compendium, Chiefly from Smith, Keith, and Thompson, Oxford, 1825.
- Duncan, P.B., A Catalogue to the Ashmolean Museum, Oxford, 1836.
- Duppa, B.F., The education of the peasantry in England, London, 1834.
- Eagles, J., Bristol riots: their causes, progress and consequences, Bristol, 1832.
- istlin, John Prior, Evidences of revealed religion, and particularly christianity, stated with reference to a pamphlet called 'The Age of Reason', Bristol, 1796.
- Exley, Thomas, Principles of natural philosophy; or, a new theory of physics, founded on gravitation, London, 1829.
- a
- Falconer, W., An essay on the Bath waters in four parts, containing a prefatory introduction on the study of mineral waters in general, London, 1770.
- Falconer, W., Remarks on the influence of climate, London, 1781.
- Falconer, W., A practical dissertation on the medicinal effects of the Bath waters, Bath and London, 1790.

Fox, E.L., Surmises respecting the cause and nature of cholera, Bristol, 1831.

Fox, F. and Fox, C., History and present state of Brislington House, near Bristol established by Edward Long Fox, Bristol, 1836.

Fryer, Michael, The geometrical analysis of the ancients, Bristol, 1810.

Geoffrey, E. St.-Hilaire, Principes de philosophie zoologique, Paris, 1830.

Gold, F., (translator), Physiological researches on life and death by Xavier Bichat, London and Bristol, 1815.

Goldsmith, O., The life of Richard Nash of Bath, London and Bath, 1762.

Graham, J., The general state of medical and chirurgical practice exhibited, showing them to be inadequate, ineffectual, absurd and ridiculous, sixth edition, London, 1778.

Graham, J., A new, plan and rational treatise on the Bath waters, Bath, 1789. i

Gutch, J.M., Letters on the impediments which obstruct the trade and commerce of the city and port of Bristol, Bristol, 1823.

Gutch, J.M., Observations or notes upon the writings of the ancients, upon the materials which they used, and upon the introduction of the art of printing, Bristol, 1827.

Harford, J.S., Some account of the lite, death and principles of Tom Paine, together with remarks on his writings, and on their intimate connection with the

avowed objects of the revolutionists of 1793 and of the radicals in 1819, Bristol, 1819.

Humboldt, von A., Kosmos (trans. Augustin Prichard), London, 1845-48.

Hunter, J., On the connection of Bath with the literature and science of England, Bath, 1827.

Johnson, J., Transactions of the corporation of the Poor during a period of 126 years, Bristol, 1826.

Johnson, J.R., A treatise on the medicinal leech, London, 1816.

Kenrick, J. The authority of Jesus, being a sermon preached at Lewin's Mead meeting, Bristol, 1836.

Kentish, Edward, A view of the moral and political epidemic which has devastated Europe for several years, Bristol, 1798.

Kentish, Edward, Cases of cancer, with observations on the use of carbonate of lime in that disease, Bristol, 1802.

Langworthy, C.C., A view of the Perkinian electricity, Bath, 1798.

Lucas, Charles, An essay on waters, London, 1756.

Lyell, C., Principles of Geology, being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes now in Operation, 3 vols., London, 1830-3.

Lyell, C., 'Reply to a Note in the Rev. Mr. Conybeare's Paper entitled "An Examination of those Phaenomena of Geology, which **Seem** to Bear most Directly on Theoretical Speculations", Phil. Mag. & Ann. Phil., 1831, 9, 1-3.

MacEnery, J., Cavern Researches, or, Discoveries of Organic Remains, and of British and Roman Reliques, in the Caves of Kent's Hole, ed. E. Vivian, London, 1859.

Malthus, T.R., An Essay on the Principle of Population, London, 1798.

Manchee, T.J., Bristol charities; report of the Commissioners, 2 vols, Bristol, 1831.

More, Hannah, Coelebs in search of a wife, third edition, London, 1809.

More, Hannah, The works of Hannah More, eleven volumes, London, 1853.

Oliver, W., Essay on the use and abuse of warm bathing, Bath, 1764.

Owen, E., Observations on the earth, rocks, stones and minerals tor some miles about Bristol, Bristol, 1754.

Parry, C.H., An inquiry into the symptoms **and causes of** the syncope anginosa, commonly called angina pectoris, Bath, 1799.

Parry, C.H., Elements of pathology and therapeutics, second edition, London, 1825.

Prichard, J.C., Researches into the Physical History of Man, London, 1813.

Prichard, J.C., A history of the epidemic fever which prevailed in Bristol during the years 1817. **1818 and** 1819, London, 1820.

Prichard, J.C., A review of the doctrine of a vital principle, as maintained by some writers on physiology, London, 1829.

Prichard, J.C., A treatise on insanity, London, 1835.

- Prichard, J.C., 'An address delivered at the third anniversary meeting of the Provincial Medical and Surgical Association July 1835', Trans. Prov. Med. Surs. Assoc., 1836, 4, 1-54.
- Riley, H., 'On the Squaloria', Transactions of the Geological Society of London, 1837, 5, 83-88.
- Riley, H. and Stutchbury, S., 'A description of various fossil remains of three distinct Saurian animals, recently discovered in the Magnesian conglomerate near Bristol', Transactions of the Geological Society of London, 1840, 5(ii), 349-57.
- Riley, H. et al., 'Memorial addressed to the Chairman of the Parliamentary Committee on medical education', Lancet, 1833-34, 2, 425-6.
- Rootsey, Samuel, A general dispensatory of arrangement of the phramacopoeias of London, Edinburgh and Dublin, Bristol, 1815.
- Schimmelpenninck, Mary Ann, Theory on the classification of beauty, London, 1815.
- Seyer, S., Memoirs of Bristol, Bristol, 1821.
- Silliman, Benjamin, A Journal of travels, 3 vols., New Haven, 1820.
- Smith, R., Address on the opening of the Bristol Medical School, Bristol, 1833.
- Smollett, T., An Essay on the external use of water, London, 1752.
- Somerton, W.H., Narrative of the Bristol riots; the final report of the committee of the parochial deputies; trial of Charles Pinney, esq., mayor of Bristol, London, 1833.

- Southey, R., Life of Wesley and the rise and progress of Methodism, London, 1820.
- Stock, J.E., Life of Thomas Beddoes, London and Bristol, 1811.
- Stutchbury, S., 'On the formation and growth of coral reefs and islands', West of England Journal of Science and Literature, 1835-6, 1, 45-6.
- Stutchbury, S., Brief directions for preserving and bringing home objects of natural history, Bristol (for the Institution), 1832.
- Stutchbury, S., 'Description of a new species of plesiosaurus in the museum of the Bristol Institution', O.J. Geol. Soc. **1846**, 2, 411-17.
- Symonds**, J.A., Our Institution and its studies, Bristol, 1850.
- Thicknesse, P., A valetudinarian's Bath guide, London and Bath, 1780.
- Thicknesse, P., An epistle to Dr. William Falconer of Bath, Bath, 1782.
- Thomson, T., A history of the Royal Society, London, 1812.
- Warner, R., The history of Bath, Bath, 1801.
- Winter, G., Animal magnetism; history of; its origin, progress and present state, Bristol, 1801.

SECONDARY SOURCES

- Aarsleff, H., The Study of Language in England, 1780-1860, Princeton, 1967.
- Abel-Smith, B., The hospitals 1800-1948, London, 1964.
- Abrams, P., The Origins of British Sociology: 1834-1914, Chicago, 1968.
- Alford, B. **W.E.**, **W.D.** & H.O. Wills and the development of the U.K. tobacco industry 1786-1966, London, 1973.
- Allen, D.E., The Naturalist in Britain, London, 1976.
- Altick, R.D., The shows of London, Cambridge, **Mass. and** London, 1978.
- Anning, S.T., 'The practice of Surgery in Leeds, 1823-24', Medical History, 1979, 23, 59-95.
- Ardern, L.L., 'The Manchester Lit. and Phil.', J. Chem. Educ., 1962, 39, 264-5.
- Ashton, T.S., Economic and Social Investigations in Manchester, 1833-1933: a Centenary History of the Manchester Statistical Society, London, 1934.
- Averill, James H., 'Wordsworth and 'natural science': the poetry of 1798', J. Engl. Germ. Philol., 1978, 77, 232-46.
- Baly, M., 'The sick paupers of Bath, 1760-1840', Hist. Nurs. Grp., Roy. Coll. Nur. Bull., 1983, 1, 2-5.
- Barbeau, A., Life and letters of Bath in the eighteenth century, London, 1904.
- Barber, L., The Heyday of Natural History, London, 1980.
- Barbour, R.F., 'The history of psychiatry in Bristol', Bristol med.-chir. J., 1974, 89, 45-54.

- Barker, Kathleen, The Theatre Royal, Bristol 1766-1966.
Two centuries of stage history, London, 1974.
- Barker, Kathleen**, Bristol at play: five centuries of live entertainment, Bradford on Avon, 1916.
- Barnes, B. and Shapin, S. (eds)**, Natural Order: Historical Studies of scientific culture, Beverley Hills, California and London, 1979.
- Barton, R., The X Club: science, religion and social change in Victorian England. [Ph.D. thesis, Univ. of Pennsylvania, 1976]
- Beaven, A.B.**, Bristol Lists: Municipal and Miscellaneous, Bristol, 1899.
- Bentley, G.E. Jnr., A Bibliography of George Cumberland, New York and London, 1975.
- Berman, M.**, Social Change and Scientific Organization: The Royal Institution, 1799-1844, London, 1978.
- Bloor, D.U., 'The use of the general practitioner in the nineteenth century', J. Roy. Coll. Gen. Practit., 1978, 28, 288-91.
- Boase, Frederic**, Modern English Biography, vol. 1., Truro, 1892.
- Bowen, John, A briet memoir of William Baker, Taunton, 1854.
- Bowler, P.J., Fossils and Progress; Palaeontology and the Idea of Progressive Evolution in the Nineteenth Century, **New York, 1976.**
- Bradley, I., The Call to Seriousness, London, 1976.
- Briggs, A., The Age of improvement 1783-1867, London, 1959.
- Brock, M.**, The Great Reform Act, London, 1973.

Brockington, C.F., Public Health in the Nineteenth Century,
Edinburgh, 1965.

Brooke, J.H., 'The natural theology of the geologists: Some
theological strata' in L.J. Jordanova and R.S. Porter
(eds), Images of the Earth: Essays in the History of
the Environment Sciences, Chalfont St. Giles, 1979,
39-64.

Brown, F.K., Fathers of the Victorians: The Age of
Wilberforce, Cambridge, 1961.

Brown, N.J., 'Medical journalism in the West of England
1889-1970', Bristol med.-chir. J., 1974, 89, 31-43.

Brown, P.S., 'The providers of medical treatment in
mid-nineteenth century Bristol', Medical History, 1980,
24, 297-314.

Brown, P.S., 'Defining the medical procession in
mid-nineteenth century Bristol', Bristol Med. Hist.
Journ., 1981, 96, 4-7.

Brown, P.S., 'Herbalists and medical botanists in
mid-nineteenth century Britain with special reference
to Bristol', Medical History, 1982, 26, 405-20.

Brown, P.S., 'Some treatment of skin disease in eighteenth
century Bath', Int. J. Derm., 1982, 21, 555-59.

Buchanan, R.A. and Cossons, N., The Industrial
Archaeology of the Bristol region, Newton Abbot, 1969.

Buchanan, R.A. and Cossons, N., Industrial history in
pictures: Bristol, Newton Abbot, Devon, 1970.

Burnby, J., 'Education of a provincial apothecary
(Richard Pulteney 1730-1801)', Pharm. Hist., 1978, 8,
5-6.

Burnby, J., A Study of the English Apothecary from 1660 to

- 1760 with special reference to the provinces, Medical History, supplement 3, London, 1983.
- Bush, G.W.A., Bristol and its Municipal Government, 1820-1851, Bristol, 1976.
- Butcher, E.E., Bristol Corporation of the Poor, 1696-1898, Bristol, 1972.
- Cannon, S.F., Science in Culture: The Early Victorian Period, New York and Folkestone, 1978.
- Cardwell, D.S.L., The Organization of Science in England, London, 1972.
- Carter, D.J., 'The Social and political influences of the Bristol churches, 1830-1914', MLitt. thesis, University of Bristol, 1971.
- Cartwright, F.F., The English Pioneers of Anaesthesia, Bristol and London, 1952.
- Cave, C.H., A history of banking in Bristol from 1750 to 1899, Bristol, 1899.
- Chadwick, O., The Victorian Church. Parts 1 and II, London, 1966, 1970.
- Cherry, S.G., The role of the English provincial hospitals in the 18th and 19th centuries. [Ph.D. thesis, Univ. of East Anglia, 1977].
- Clark E.K., The History of 100 Years of Life of the Leeds Philosophical and Literary Society, Leeds, 1924.
- Clark, G., A History of the Royal College of Physicians of London, Oxford, 1964-66.
- Clark, G.K., Peel and the Conservative Party: a Study in Party Politics 1832-1841, London, 1964.
- Clark, G.K., Churchmen and the Condition of England, 1832-85, London, 1973.

- Clark, J.W. and Hughes, T.M., The Life and Letters of the Reverend Adam Sedgwick, Cambridge, 1890.
- Coleman, W., Death is a social disease, Madison, Wisconsin, 1982.
- Coleridge, H.N., Specimens of the Table Talk of the Late Samuel Taylor Coleridge (1835) in T. Ashe (ed.), The Table Talk and Omniana of Samuel Taylor Coleridge, London, 1923.
- Coleridge, S.T., On the Constitution of the Church and State, According to the Idea of Each, London, 1830, printed in the The Collected Works of Samuel Taylor Coleridge, x, London and Princeton, 1976.
- Conybeare, F.C., (ed) . Letters and exercises of the Elizabethan schoolmaster John Conybeare, with a fragment of autobiography by W.D. Conybeare, London, 1906.
- Cookson, J.E., Lord Liverpool's Administration, Edinburgh, 1975.
- Cooter, R., 'Phrenology: the provocation of progress', History of Science, 1976, 14, 211-34.
- Cope, Z., 'The Influence of the free dispensaries upon medical education in Britain', Medical History, 1969, 13, 29-36.
- Craig, P., 'The first British Medical Association meeting in Bristol', Bristol med.-chir. journal, 1983, 98, 104-108.
- Crane, M.D., 'Arthur Broughton, a late eighteenth century botanist in Bristol and Jamaica', Archives of Natural History 1981, 10, 317-30.

- Crane, M.D., 'Samuel Stutchbury (1798-1859), naturalist and geologist', Notes. Rec. Roy. Soc. London, 1983, 37, 185-200.
- Cranfeld, G.A., The development of the provincial newspaper: 1700-1760, oxford, 1962.
- Cross, F.R., 'Early medical teaching in Bristol: the Bristol Medical School and its association with the University College', Bristol med. - Chir. Journal, 1927, 44, 73-112.
- Cullen, M.J., The Statistical Movement in Early Victorian Britain, Hassocks Sussex, 1975.
- Cutler, J.C., The London Institution 1805-1933, Ph.D., Univ. of Leicester, 1976.
- De Giustino, D., Conquest of Mind: Phrenology and Victorian Thought, London,--1975.
- Delair, J.B., 'A History of the Early Discoveries of Liassic Ichthyosaurs in Dorset and Somerset (1779-1835)', Proc. Dorset Nat. Hist. Archaeol. Soc., 1968, 2, 115-27.
- Delair, J.B. and Sarjeant, W.A.S., 'The Earliest Discoveries of Dinosaurs', Isis, 1975, 66, 5-25.
- Dobson, Lawrence, 'A history of pharmacy at Bristol Royal Infirmary. I. Equipping the apothecary shop', Chem. and Drugg., 1956, 165, 622-4.
- Dobson, Lawrence, 'A history of pharmacy at Bristol Royal Infirmary. 2. The Infirmary pharmacopoeia', Chem. and Drugg., 1956, 166, 171-3.
- Dobson, Lawrence, 'A history of pharmacy at Bristol Infirmary: 3. The apothecaries and their apprentices.

4. From "dispenser" to chief pharmacist', Chem. and Drugg., 1956, 166, 222-3.
- Dobson, Lawrence, 'A history of pharmacy at Bristol Royal Infirmary: 5. Promotion to group status', Chem. and Drugg., 1956, 166, 441-3.
- Duman, Daniel, 'The creation and diffusion of a professional ideology in 19th century England', Sociol. Rev., 1979, 27, 113-138.
- Dunkley, P., The crisis of the old Poor Law in England, 1795-1834, New York, 1982.
- Durey, M.J., 'Body snatchers and Benthamites: The Implications of the **Dead** Body Bill for the London School of Anatomy, 1820-42', The London Journal, 1976, 2, 200-225.
- Edsall, N.C.**, The anti-poor Law movement 1834-44, Manchester and New Jersey, 1971.
- Elsas, M., Iron in the making: Dowlais Iron Company letters 1782-1860, Cardiff, 1960.
- Emerson, Roger, L.**, 'The Philosophical society of **Edinburgh** 1737-47', Brit. J. Hist. Sci., 1979, 12, 154-91.
- Engel, A., 'The emerging concept of the academic profession at Oxford 1800-1854', in L. Stone (ed.), The University in Society, Vol I: Oxford and Cambridge from the 14th to the early 19th Century, Princeton, 1975, 305-52.
- Evans, C.D., 'A history of dermatology in Bristol and the West of England', Brit. J. Derm., 1972, 86, 180-91.
- Eyles, V.A., 'Scientific activities in the Bristol region

- in the past', in C.A. **MacInnes and W.F. Whittard** (eds.), Bristol and its Adjoining Counties, Bristol, **1955**.
- Eyre-Brook, A.L., 'Richard Smith junior **and his times**', Bristol med.-chir. J., 1969, 84, 1-11.
- Falconer, R.W.F., The Bath General or Hot Water Hospital, Bath, 1857.
- Fawcett, T., The Rise of English Provincial Art, Oxford, 1974.
- Foote, G.A.**, 'The place of science in the **British reform** movement, 1830-50', Isis, 1951, 43, 192-208.
- Foote, G.A., 'Science and its function in early nineteenth century England', Osiris, 1954, 11, 438-454.
- Forbes, D., The Liberal Anglican Idea of History, Cambridge, 1952.
- Foster, J., Class Struggle and the Industrial Revolution: Early Industrial Capitalism in Three English Towns, London, 1974.
- Frank, R.G. Jr., Harvey and the Oxford physiologists, Berkeley, California, 1980.
- Fraser, D. (ed.)**, Municipal reform and the industrial city, Leicester, 1982.
- Fuller, Margaret, West Country Friendly Societies, University of Reading **Museum** of English Life, Reading, **1964**.
- Gallop, D.F. Chapters in the history of the provincial newspaper 1700-1855, Bristol, 1954. Typescript thesis.
- Garner, W.E., 'Schools of chemistry in Great Britain and Ireland IX - The University of Bristol', J. Roy. Inst. Chem., 1954, 78, 5-14.

- Gash, N., Sir Robert Peel: The Life of Sir Robert Peel after 1830, London, 1972.
- Gillispie, C.C., Genesis and Geology: A Study in the Relations of Scientific Thought, Natural Theology, and Social Opinion in Great Britain, 1790-1850, New York, 1959.
- Gomme, M. D., Jenner**, Michael and Little, Bryan, Bristol: an architectural history, London, 1979.
- Green-Armytage, A.H.N., The Story of Bristol Zoo, 1835-1965, Bristol, 1964.
- Greenacre, F., The Bristol School of Artists: Francis Danby and Painting in Bristol 1810-1840, Bristol, 1973.
- Grosskurth, P. (ed), The Memoirs of John Addington Symonds, London, 1984.
- Hall, V., 'The contribution of the physiologist William Benjamin Carpenter (1813-1885) to the development of the principles of the correlation of forces and the conservation of energy', Medical History, 1979, 23, 129-155.
- Harford, A., Annals of the Harford family, London, 1909.
- Harrison, B.**, Drink and the Victorians: The Temperance Question in England, 1815-1872, London, 1971.
- Harrison, J.F.C.**, The early Victorians, London, 1971.
- Harrison, J.M.**, The crowd in Bristol 1790-1835, University of Cambridge Ph.D. thesis, 1983.
- Hart, Andrew, A catalogue of periodicals printed in Bristol 1820-1840, Leicester, 1972 (typescript).
- Hart, H.W.**, 'The conveyance of patients to and from hospitals 1720-1850', Med. Hist., 1978, 22, 397-407.

- Harvey, A., Bristol: a historical and topographical account of the city, London, 1906.
- Hays, J.N., 'Science in the city: the London Institution 1819-40', British Journal for the History of Science, 1974, 7, 146-62.
- Hinton, D.A., Popular Science in England, 1830-1870. [Ph.D. thesis, Bath University, 1980].
- Hobsbawm, E.J., The Age of Revolution 1789-1848, London, 1962.
- Holloway, S.W.F., 'Medical Education in England, 1830-1858: A Sociological Analysis', History, 1964, **49**, 299-324.
- Holloway, S.W.F., 'The Apothecaries Act, 1815: a reinterpretation', Medical History, 1966, 10, 107-29, 221-36.
- Holman, J.R., 'Orphans in pre-industrial towns - the case of Bristol in the late seventeenth century', Local Popul. Stud., 1975, 15, 40-4.
- Holt, R.V., The Unitarian Contribution to Social Progress in England, London, 1938.
- Hoole, G.P., Sir Humphry Davy: Tonbridge associations, Tonbridge, 1978.
- Hoorer, Suzanne, R., 'Coleridge, Humphry Davy and some early experiments with a **consciousness**-altering drug', Bull. Res. Hum., 1978, 81, 9-27.
- Howarth, O.J.R., The British Association for the Advancement of Science: A Retrospect 1831-1931, London, 1931.
- Hudson, K., The Bath and West, Bradford-on-Avon, 1976.

- Hudson, Kenneth, A social history of museums: what the visitors thought, London, 1975.
- Hulbert, N.F., Brislington Parish Church, Bristol, 1952.
- Hume, A., The Learned Societies and Printing Clubs of the United Kingdom, London, 1847.
- Hutton, S., Bristol and its Famous Associations, Bristol, 1907.
- Inkster, I., 'The development of a scientific community in Sheffield, 1790-1850: a network of people and **interests**', Transactions of the Hunter Archaeological Society, 1973, 10, 99-131.
- Inkster, I., 'Science and the Mechanics' Institutes, 1820-50', Annals of Science, 1975, 32, 451-74.
- Inkster, I., 'Culture, institutions and urbanity: the itinerant science lecturer in Sheffield 1790-1850', in S. Pollard and C. Holmes (eds.), Essays in the Economic and Social History of South Yorkshire, Sheffield, 1976.
- Inkster, I., 'The social context of an educational movement: a revisionist approach to the English **mechanics** ' institutes, 1820-1850', Oxford Review of Education, 1976, 2, 277-307.
- Inkster, I., Studies in the social history of science in England during the Industrial Revolution, University of Sheffield Ph.D. thesis, 1977.
- Inkster, I., 'Science and society in the metropolis: a preliminary examination of the social and economic context of the Askesian Society of London, 1796-1807', Annals of Science, 1977, 34, 1-32.
- Inkster, I., 'London science and the seditious meetings act of 1817', Brit. J. Hist. Sci., 1979, 12, 192-196.

- Inkster, I., and Morrell, J., Metropolis and Province: science in British culture 1780-1850, London, 1983
- Jacob, M.C., The Newtonians and the English Revolution 1689-1720, Hassocks, Sussex, 1976.
- Jacyna, L.S., 'The physiology of mind, the unity of nature, and the moral order in Victorian thought', British Journal for the History of Science, 1981, 14, 109-132.
- James, I. Pierce, 'Dr. Thomas Beddoes' medical pneumatic institution at Hotwells, Bristol in 1799', Soc. soc. Hist. Med. Bull., 1973, 11, 6-7.
- Jewson, N., 'Medical knowledge and the patronage system in 18th century **England**', Sociology, 1974, 8, 369-85.
- Johnson, H.P., Medical care in a provincial town: the hospitals of Sheffield, 1790-1860. University of Sheffield M.A. thesis, 1977.
- Jones, Kathleen, A History of the Mental Health Sciences, London, 1972.
- Jordanova, L.J. and Porter R.S., Images of the Earth, Chalfont St. Giles, 1979.
- Kargon, R.H., Science in Victorian Manchester: Enterprise and Expertise, Manchester, 1972.
- Kark, R.M. and Moore, D.T., 'The life, work and geological collections of Richard Bright, M.D. (1789-1858); with a note on the collections of other members of the family', Archives of Natural History, 1981, 10, 119-151.
- Kaufman, P., Borrowings from the Bristol Library, 1773-1784: a unique record of reading vogues, Charlottesville, Virginia, 1960.

- Kett, J.F., 'Provincial Medical Practice in England 1730-1815', J. Hist. Med., 1964, 19, 17-29.
- Kite, V.J., Libraries in Bath 1618-1964, thesis for a fellowship of the Library Association, Bath, 1966.**
- Knights, B., The Idea of the Clerisy in the Nineteenth Century, Cambridge, 1978.
- Lamoine, G., La vie litteraire de Bath et de Bristol: 1750-1800, Lille and Paris, 1778.
- Lane, J., 'The early history of general medicine 1700-1850: sources and methods', Sce. social Hist. Med. Bull., 1982, , 30-31, 19-21.
- Large, David and Round, Frances, Public health in mid-Victorian Bristol, Bristol, 1974.
- Latimer J., Annals of Bristol in the Eighteenth Century, Bristol, 1893.
- Latimer, J., Annals of Bristol in the Nineteenth Century, Bristol, 1887.
- Levere, T.H., Poetry realized in nature, Cambridge, 1981.
- Little, B., The City and County of Bristol, London, 1954.
- Little, E.M., History of the British Medical Association 1837-1932, London, 1937.
- Liversidge, M.J.H., The Bristol High Cross, Bristol, 1978.
- Loudon, I.S.L., 'The origin of the general practitioner', J. Royal. Coll. Gen. Practit., 1983, 33, 13-26.
- Lowe, P.D., Locals and cosmopolitans: a model for the social organization of provincial science in the nineteenth century. [Sussex M.Phil. thesis 1978].

Lyell, K.M., Life, Letters, and Journals of Sir Charles Lyell, London, 1881.

MacLaren A., 'Phrenology: Medium and message', Journal of Modern History, 1974, 46, 86-97.

MacLeod R.M. and Friday, J.R., Archives of British men of science. Introduction and Index to the publications in microfiche of a survey of private and institutional holdings of British Scientific Archives, London, 1972.

MacLeod, R.M. Friday, J.R. and Gregor, C., The Corresponding Societies of the British Association 1883-1939, London, 1975.

MacSweeney, M. and J. Reilly, 'The Royal Cork Institution. Part II 1826-1849', Journal of the Cork Historical and Archaeological Society, 1957, 62, 77-95.

Mathias, P., The First Industrial Nation: An Economic History of Britain, 1700-1914, London, 1969.

Maulitz, Russel C., 'Channel Crossing: the lure of French pathology for English medical students, 1816-36', Bull. Hist. Med., 1981, 55, 575-96.

Mazumdar, P.M.H., 'Anatomical physiology and the reform of medical education in London 1825-1835', Bull. Hist. Med., 1983, 57, 230-46.

McCartney, P.J., Henry De la Beche: Observations on an Observer, Cardiff, 1977.

McGrath, P. and Cannon J. (eds.), Essays in Bristol and Gloucestershire History, Bristol, 1976.

McLoughlin, George, A short history of the first Liverpool Infirmary 1749-1824, London and Chichester, 1978.

Meller, H.E., Leisure and the Changing City, 1870-1914,
London, 1976.

Middlebrook, S., The Advancement of Knowledge in
Newcastle upon Tyne: The Literary and Philosophical
Society as an Educational Pioneer, Newcastle upon Tyne,
1974.

Midwinter, E.C., Victorian Social Reform, London, 1968.

Miller, D.P., The Royal Society of London 1800-1835: a
study in the cultural politics of scientific
organisation. LPh.D. thesis Univ. of Pennsylvania, Ann
Arbor, 19817.

Millhauser, M., Just before Darwin: Robert Chambers and
the Vestiges, Middletown, 1959.

Millman, M., 'The Influence of the Social Science
Association on hospital planning in Victorian England',
Med. Hist., 1974, 18, 122-37.

Minchinton, W., 'Bristol - metropolis of the West in the
eighteenth century', Transactions of the Royal
Historical Society, 5th series, 4, 69-89.

Moon, N.S., Education for ministry: Bristol Baptist
College 1679-1979, Bristol, 1979.

Moore, D.C., The Politics of Deference, Hassocks, Sussex,
1976.

Morrell, J.B., 'Individualism and the structure of
British Science in 1830', Historical Studies in the
Physical Sciences, 1971, 3, 183-204.

Morrell J.B., and Thackray, A., Gentlemen of Science: early
years of the British Association for the Advancement of
Science, Oxford, 1981.

Morris, R.J., Cholera 1832, London, 1976.

- Mullett, C.F., 'Public baths and health in England 16th-18th century', Supplements to the Bulletin of the History of Medicine, 1946, 5, .
- Muncaster, M.J., Medical services and the medical profession in Norfolk 1815-1911, East Anglia Univ. Ph.D. thesis, 1976.
- Munro Smith, G., A history of Bristol Royal Infirmary, Bristol, 1917.
- Murch, J., Bath physicians of former times, Bath, 1882.
- Neale, A.V., Medical progress in Bristol, Bristol, 1964.
- Neale, R.S., Bath 1680-1850, London, 1981.
- Newman, C., The Evolution of Medical Education in the Nineteenth Century, London, 1957.
- Newman, C., 'The Hospitals as a Teaching Centre', in F.N.L. Poynter (ed) The evolution of Hospitals in Britain, London, 1964.
- Nicholls, J.F. and Taylor, J., Bristol Past and Present, 1, Bristol, 1881.
- Nicolson, F., 'The Literary and Philosophical Society 1781-1851', Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 1924, 68 97-148.
- Nixon, J.A., 'History of the British Medical School', Med. Iii., 1951, 5, 81-83.
- Norman, E.R., Church and Society in England, 1770-1970, Oxford, 1976.
- Norris Mathews, E.R. (ed.), Bristol Bibliography, Bristol, 1916.
- North, F.J., 'Dean Conybeare, geologist', Transactions of the Cardiff Naturalists Society, 1933, 66, 15-68.

- North, F.J., 'W.D. Conybeare, his geological contemporaries and Bristol associations', Proc. Bristol. Nat. Soc., 1956, 29, 133-146.
- Oliver, R.C.B., 'Diederick Wessel Linden M.D.' Nat. Libr. Wales Journal, 1974, 18, 241-267.
- Olson, R., Scottish philosophy and British physics 1750-1880: a study in the foundations of the Victorian scientific style, Princeton, 1975.
- Orange, A.D., The early history of the Yorkshire Philosophical Society: a chapter in the history of provincial science, University of London Ph.D. thesis, 1970.
- Orange, A.D., 'The Origins of the British Association for the Advancement of Science', British Journal for the History of Science, 1972, 6, 152-76.
- Orange, A.D., Philosophers and Provincials: The Yorkshire Philosophical Society from 1822 to 1844, York, 1973.
- Orange, A.D., 'The Idols of the Theatre: The British Association and its early critics', Annals of Science, 1975, 32, 277-94.
- Ospovat, D., The Development of Darwin's Theory; Natural History, Natural Theology and Natural Selection, 1838-1859, Cambridge, 1981.
- Outram D., 'The language of natural power: the "eloges" of Georges Cuvier', History of Science, 1978, 16, 153-78.
- Parfit, J., 'The Oxford Board of Health 1831-33', Publ. Health, 1982, 96(1), 25-30.

- Parker, G., The early history of surgery in Great Britain: its organization and development, London, 1920.
- Parker, George, Schola medicinae Bristol 1833-1933, Bristol, 1933.
- Parry, N. and Parry, J., The Rise of the Medical Profession: A study of Collective Social Mobility, London, 1976.
- Patterson, E.C., Mary Somerville and the cultivation of science 1815-1840, Dordrecht and The Hague, 1983.
- Pelling, M., Cholera, Fever and English Medicine, Oxford, 1978.
- Perceval, S.G., 'Journal of an Excursion to Eastbury and Bristol, etc., in May and June 1967 by Sir Jos. Banks, Bart', Proceedings of the Bristol Naturalists Society, 1898, 24, 6-37.
- Perry, C. Bruce, 'Bristol Medical School', Hist. Med. (E.R. Squibb), 1970, 2(1), 31-3.
- Peterson, H. Jeanne, The Medical Profession in Mid-Victorian London, Berkeley and Los Angeles, 1978.
- Peterson, M. Jeanne, 'Specialist journals and professional rivalries in Victorian medicine', Victorian Period. Rev., 1979, 12(1), 25-32.
- Phillips, H. Temple, 'Early mental care in and around Bristol', Soc. soc. Hist. Med. Bull., 1973, 11, 4-5.
- Phillips, H. Temple, The history of the old private lunatic asylum at Fishponds, Bristol, 1740-1859, Bristol, 1973.
- Porter, R., English Society in the eighteenth century, London, 1982.

- Porter, R.S., 'Gentlemen and geology: The emergence of a scientific career, 1660-1920', The Historical Journal, 1978, 21, 809-36.
- Powell, A.C. and Littleton, J., A history of freemasonry in Bristol, Bristol, 1910.
- Prichard, A., The Early History of the Bristol Medical School, Bristol, 1892.
- Ralph, E., Guide to the Bristol Archives Office, Bristol, 1971.
- Ralph, E., The government of Bristol 1373-1973, Bristol, 1973.
- Rawlings, F.H., '18th Century Bristol Poll Books: source list of apothecaries and chemists and druggists', Pharmaceut. Histn., 1973, 3(1), 5.
- Rehbock, P., The Philosophical Naturalists: theories in early nineteenth century British biology, Madison, Wisconsin, 1983.
- Roberts, A.E., 'On the history and growth of the Bristol Medical School Library', Bristol med.-chir. J., 1970, 85, 93-100.
- Robinson, D., A shocking history of Bristol. Six episodes of scandals, swindles, shambles, bungles, ferocity and force, Bristol, 1973.
- Robson, R. and W.F. Cannon, 'William Whewell, F.R.S. (1794-1866)', Notes and Records of the Royal Society of London, 1964, g, 168-89.
- Roderick, G.W. and Stephens H.D., Education and industry in the nineteenth century: the English disease?, London, 1978.

Rolls, Roger, 'Unplugging the Bath water's World Medicine,
1974, 10 (4), 76-8.

Rosen, G., From medical police to social medicine:
essays on the history of health care, New York 1974, .

Rosen, G., 'Economic and social policy in the
development of public health', Journal of the History
of Medicine and Allied Sciences, 1953, 8, 406-30.

Rousseau, G.S. & Porter, R. (eds.), The ferment of
knowledge. Studies in the Historiography of Eighteenth
Century Science, Cambridge, 1980.

Rowe, J., 'Humphry Davy and the Cornish contribution to
the Industrial Revolution', J. Trevithick Soc., 1978,
6, 53-63.

Rudwick, M.J.S., The Meaning of Fossils; Episodes in the
History of Palaeontology, London, 1972.

Rudwick, M.J.S., 'The Devonian: A system born from
conflict', in The Devonian System: Special Papers in
Paleontology No 23, 1979, 9-21.

Rupke, N., The Great Chain of History: William Buckland
and the English school of Geology, Oxford, 1983.

Saffin, N.W., Science religion and education in Britain
1804-1904, London, 1973.

Sanderson, M., The Universities and British Industry,
1850-1970, London, 1972.

Saunders, C.J.G., A history of the United Bristol
Hospitals, Bristol, 1965.

Schofield, R.E., The Lunar Society of Birmingham: A
Social History of Provincial Science and Industry in
Eighteenth-Century England, oxford, 1963.

Shapin, S., 'The Royal Society of Edinburgh: A study of the

- social context of Hanoverian science', University of Pennsylvania Ph.D. thesis, 1971.
- Shapin, S., 'The Pottery Philosophical Society, 1819-35: an examination of the cultural uses of provincial science', Science Studies, 1972, 2, 311-36.
- Shapin, S., 'Property, Patronage and the politics of science: the founding of the Royal Society of Edinburgh', British Journal for the History of Science, 1974, 7, 1-41.
- Shapin, S., 'Phrenological knowledge and the social structure of early nineteenth-century Edinburgh', Annals of Science, 1975, 32, 219-43.
- Shapin, S. and Barnes, B., 'Science, nature and control: interpreting Mechanics' Institutes', Social Studies of Science, 1977, 7, 31-74.
- Shapin, S. and Thackray, A., 'Prosopography **as a reserach** tool in history **of science**: the British **scientific** community 1700-1900', History of Science, 1974, 11, 1-28.
- Shepherd, J.A., 'The evolution of the provincial medical schools in England', Transactions and Report of the Liverpool Medical Institution, 1981-82, , 14-39.
- Shortt, S.E.D., 'Physicians, revenue and status: **issues** in the professionalization of Anglo-American medicine in the nineteenth century', Med. Hist., 1983, 27, 51-68.
- Silver, H., English Education and the Radicals 1780-1850, London, 1971.

- Singer, C. and Holloway, S.W.F., 'Early Medical Education in England, in Relation to the Pre-history of London University ', Med. Hist. , 1960 , 4, 1-17.
- Skinner, H. and Coombs , P., Journal of a Somerset Rector , Bath, 1971.
- Smith, B. and Ralph E., A history of Bristol and Gloucestershire , Beaconsfield, 1972.
- Soloway, R.A., Prelates and People , London, 1969.
- Speakman, C., Adam Sedgwick: geologist and dalesman, 1785-1873, Heathfield, **Sussex**, 1982.
- Spender, J.R., The Bath Thermal Waters , London and Bath, 1877.
- Squire Sprigge, S., The Life and Times of Thomas Wakley , London, 1899.
- Stanstield, D.A., Thomas Beddoes M.D., 1760-1808, chemist, physician, democrat , Dordrecht, Holland, 1984.
- Steele, E.D. , 'The Leeds patriciate and the cultivation of learning, 1819-1905: a study of the Leeds Literary and Philosophical Society', Proc. Leeds Philos. Lit. Soc. , 1978, 16, 183-202.
- Stevas, N. St. J. (ed), The collected works of Walter Bagehot , London, 1965-.
- Stocking, G.W. Jnr., 'From chronology to ethnology: James Cowles Prichard and British anthropology, 1800-1850', in Prichard, Researches into the Physical History of Man , London, 1813, reprinted, Chicago, 1973, 9-110.
- Stocking, G.W., 'What's in a name? The origins of the Royal Anthropological Institute (1837-71)', Man , 1971, 6, 369-90.

- Sturges, R. P., 'The membership of the Derby Philosophical Society 1783-1802', Midland History, 1978, 4, 212-29.
- Swan, Philip, 'A brief summary of the role and position of medical societies in the early nineteenth century medical profession', Journal of Local Studies, 1982, 2, 43-7.
- Symes, J. O., A short history of the Bristol General Hospital, Bristol, 1932.
- Symonds, J.A., Ten Years, Bristol, 1861.
- Taylor, F.S., 'The teaching of science at Oxford in the nineteenth century', Annals of science, 1952, 8, 82-112.
- Thackray, A., 'Natural knowledge in cultural context: The Manchester model', American Historical Review, 1974, lxxix, 672-709.
- Thackray, A., 'Medicine, manufactures and Manchester men: the genesis of a scientific community', Actes XIIIe Cong. Int. Hist. Sci. 1971, 1974, 2, 219-224.
- Thompson, E.P., 'The peculiarities of the English', in The Poverty of Theory, London, 1978.
- Thomson, Elizabeth H., 'The role of physicians in the humane societies of the eighteenth century', Bull. Hist. Medicine, 1963, 37, 43-51.
- Todd, A.C., Beyond the Blaze. A Biography of Davies Gilbert, Truro, 1967.
- Todhunter, I., William Whewell, London, 1876.
- Tovey, C., Bristol City Library: Its Founders and Benefactors, Bristol, 1853.
- Turner, E.S., Taking the cure, London, 1967.

- Turner, F.M.**, 'The Victorian conflict **between science and religion: A professional dimension**', Isis, 1978, 6g, 356-76.
- Turner, G.L.E. (ed.), The Patronage of Science in the Nineteenth Century, Leyden, 1976.
- Turner, P.V., The Royal Mineral Water Hospital, Bath: a brief history 1742-1921, Bath, 1921.
- Van Zwanenberg, D., 'The training **and careers** of those apprenticed to apothecaries in Suffolk 1815-1858', Med. Hist., 1983, 27, 139-50.
- Vess, D.M.**, Medical revolution in France, 1789-1796, Gainesville, Florida, 1975.
- Vincent, J.R., The Formation of the British Liberal Party, Hassocks, Sussex, 1976.
- Wall, C., The History of the Surgeons' Company 1745-1800, London, 1937.
- Wall, C., Cameron, H.C. and Underwood, E.A., A History of the Worshipful Society of Apothecaries of London, London, 1963.
- Ward, J.R., The Finance of canal building in eighteenth century England, Oxford, 1974.
- Ward, T.H., History of the Athenaeum 1824-1925, London, 1926.
- Warin, R.P., 'Medicine and Bristol Zoo', Bristol med.-chir. Journal, 1982, 97, 4-11.
- Watkin, D., The Life and Work of C.R. Cockerell, London, 1974.
- Watson, R.S., The History of the Literary and Philosophical Society of Newcastle-upon-Tyne (1793-1896), London, 1897.

- Weber, C.A., Bristols bedeutung fur die englische Romantik, Halle, 1935.
- Webster, Charles, 'The crisis of the hospitals during the Industrial Revolution', Proc. 15th Int. Cong. Hist. Sci., 1978, , 214-223.
- Webster, W.H. The Introduction of science into university education in England, 1820-80 Cambridge University M.Litt. thesis, 1975.
- Weindling, P., 'Science and sedition: how effective were the Acts licensing lectures and meetings 1795-1819?', Brit. J. Hist. Science, 1980, 13, 139-53.
- Weller, R.M., 'Nitrous oxide in Bristol 1836. A series of lectures by William Herapath (1796-1868)', Anaesthesia, 1983, 38, 678-82.
- Wells, C., Historic Bristol, Bristol, 1902.
- Whately, E.J., Life and Correspondence of Richard Whately, D.D., late Archbishop of Dublin, London, 1866.
- Whittet, T.D., 'Apothecaries and their Lodgers', Jl. of Roy. Soc. of Med., 1983, 76, 1-32.
- Wilson, L.G., Charles Lyell: the Years to 1841: the Revolution in Geology, New Haven, 1972.
- Winstanley, D.A., Early Victorian Cambridge, Cambridge, 1955.
- Winstone, R., Bristol's earliest photographs, Bristol, 1974.
- Winstone, R., Bristol's history, Bristol, 1975.
- Winstone, R., Bristol in the 1850's, Bristol, 1978.
- Winter, H.J.J. (ed.), Scientific notes from the earl minutes of the Peterborough Gentlemen's Society 1730-45, Isis, 1939, 31, 51-60.

Wohl, A.S., Endangered lives. Public Health in Victorian Britain, London, 1983.

Woodward J. and Richards D., Health Care and Popular Medicine in Nineteenth Century England, London, 1977.

Woodward, John, To do the sick no harm. A study of the British voluntary Hospital System to 1875, London and Barton, 1974.

Wright, D.W., 'A short history of isolation accommodation in Bristol', Bristol med.-chir. J., 1968, 83, 35-8.

Young, G.M., Portrait of an Age: Victorian England.
Annotated Edition by George Kitson Clark with a
Biographical Memoir, London, 1977.